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FOREST PRODUCTS ANNUAL MARKET REVIEW

1993-1994

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Timber Section, Agriculture and Timber Division
Geneva, Switzerland

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NOTE

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

ABSTRACT

The *Forest Products Annual Market Review: 1993-1994* provides general and statistical information on forest products markets in the UN-ECE region of Europe, North America and the former USSR. The *Review* begins with a general overview of the forest products markets in the region. A description of the economic situation in Europe and North America is then followed by a discussion of wood fibre recycling and its effects on the forest and forest industries sector. In-depth description is given on developments in four sectors: roundwood, sawnwood, wood-based panels and paper and paperboard, woodpulp and pulpwood. For each sector production, consumption and trade are considered and relevant material on specific markets is included. Tables included with the text present detailed information and annex tables contain further reference material.

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Preface

The *Forest Products Annual Market Review* provides general and statistical information on forest products markets in the UN-ECE region, including Europe, the former USSR and North America, for the period beginning 1993 to mid-1994. It is intended to serve as a background document for the annual market discussion for the ECE Timber Committee session, which will be held on 12 October 1994. Furthermore, it provides readers with comprehensive data on recent developments in the forest and forest product sector in the ECE region.

The *Review* begins with an overview of the forest products markets, followed by a general appraisal of economic conditions which have directly or indirectly influenced forest products markets in the ECE region. A special section this year discusses wood fibre recycling and its effects on the forest and forest industries sector. In-depth description is given of sectoral developments covering roundwood, sawnwood, wood-based panels, and pulpwood, pulp and paper. Production, consumption and trade are considered and additional material on specific markets is included. While most tables will be found with their descriptive text, additional tables found in the annex present information on apparent consumption by product and country as well as price information.

This *Review* was compiled using data from ECE-region countries responding to FAO/ECE questionnaires and other data available until the end of June 1994. The authors express their appreciation to contributing countries which included all major ECE-region producers and traders with a net response rate better than the past five years. In light of the lack of reporting of intra-European trade statistics, estimations of trade provided by the respondents enabled a timely estimation of the 1993 European market. Specialized journals, industry associations and other sources were used as supplemental sources where official data were lacking. In the case where no data were available the previous year's figure is used to calculate the regional total.

The *Review* will be complemented by the *Timber Bulletin* issue No. 6, *Forest Products Markets in 1994 and Prospects for 1995*, which will contain the results of the Timber Committee's market discussion. All statistics collected in the questionnaire are presented systematically in issue No. 2, *Forest Products Statistics, 1989-1993*. The issues of the *Timber Bulletin* for 1994 (volume XLVII) are:

1. Forest Products Prices, 1989-1993
2. Forest Products Statistics, 1989-1993
3. Forest Products Annual Market Review, 1993-1994
4. Forest Fire Statistics, 1991-1993
5. Forest Products Trade Flow Data, 1989-1993
6. Forest Products Markets in 1994 and Prospects for 1995.

Readers may notice a change of appearance and numbering of the *Timber Bulletin* as a result of a complete overhaul of the UN-ECE/FAO Agriculture and Timber Division, Timber Section publication series. The authors would like to draw your attention to the new series of the secretariat which are elaborated in the back of this publication:

Geneva Timber and Forest Study Papers (formerly ECE/TIM publications),
Geneva Timber and Forest Discussion Papers,
Geneva Timber and Forest Seminar and Workshop Proceedings,
Geneva Timber and Forest Information Series.

Comments on the new format are welcome.

The *Review* is published on the sole responsibility of the secretariat. This manuscript was completed on 26 July 1993. More information on activities of the Timber Committee may be obtained by writing to:

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Explanatory notes

"Apparent consumption" is calculated by adding a country's production to imports and subtracting exports. When data are available, the apparent consumption volume is adjusted for changes in the level of stocks.

"Net trade" is calculated as the balance of exports and imports and is shown as "+" for net exports, when exports exceed imports and is shown as "-" for net imports, when imports exceed exports.

Insufficient data were received from all of the countries of the former Yugoslavia and the former USSR to publish complete information for these country groupings. The term "former USSR" is used in the tables for brevity when referring to the Commonwealth of Independent States (CIS) plus Estonia, Latvia and Lithuania. The term "central and eastern Europe", used exclusively for presentational convenience, includes Albania, Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic and the former Yugoslavia. The countries of the former USSR and other countries of central and eastern Europe are referred to collectively as "countries in transition to market economies".

The term "coniferous wood" is used synonymously with "softwood" throughout the *Annual Market Review*. "Non-coniferous" is used synonymously for terms "hardwood" or "broadleaved" wood. In discussions of North American markets the term "lumber" may be used for "sawnwood".

Symbols and abbreviations used

-	nil or negligible
...	not available
*	secretariat estimate or unofficial figure
$	United States dollar or otherwise specified
£	United Kingdom's pound sterling
AF&PA	American Forest and Paper Association
c.i.f.	customs + insurance + freight included
CIS	Commonwealth of Independent States
CMEA	Council for Mututal Economic Assistance
EC	European Community
ECU	European Currency Unit
EEA	European Economic Area
EFTA	European Free Trade Assocation
EMS	European Monetary System
ERM	the EMS Exchange Rate Mechanism
EU	European Union (currently 12 states)
f.a.s.	free alongside ship
FESYP	European Federation of Associations of Particleboard Manufacturers
GATT	General Agreement on Tariffs and Trade
GNP	gross national product
GSP	Generalized System of Preferences
GDP	gross domestic product
IMF	International Monetary Fund
kg	Kilogramme
m^3	cubic metre (solid volume of roundwood or processed product)
m^3EQ	cubic metres equivalent volume of wood in the rough
m.t.	metric ton
MBF	thousand board feet (2.4 m^3 for sawnwood)
NMP	net material product
PNG	Papau New Guinea
PNW	Pacific Northwest (of the United States)
PPI	Produce Price Index
Prelim.	Preliminary
Q	Quarter

Chapter I

OVERVIEW OF THE FOREST PRODUCTS MARKETS

In 1993, forest products markets improved in North America, but fell for the fourth consecutive year in Europe and the former USSR (table 1). In *North America* sawnwood apparent consumption increased 2.0% due to general economic improvement with significant growth in United States residential housing construction which affected not only coniferous timber, but also non-coniferous sawnwood for millwork, cabinetry and furniture. Canada produced and exported more timber to the United States. The North American timber market is undergoing a structural change as the northwestern federal timber lands are withdrawn from production due to environmental concerns; meanwhile supplies were derived from alternative domestic and foreign sources and timber prices rose. North American wood-based panels consumption improved by 4.3% in 1993 over 1992, again due to demand for construction. Paper and paperboard consumption also improved in North America, by 3.2% over 1992, as domestic markets regained strength and some export markets began recovering from recessions.

Opposite trends were found in *Europe* where overall domestic consumption of forest products fell 1.3% in 1993 compared to 1992 as many economies remained in recession. Sawnwood and wood-based panels were down, by 3.8 and 1.9% respectively, while paper and paperboard consumption moved up slightly, by less than 1%. The advance of exports from Sweden and Finland filled voids left by Canadian exporters who turned towards the strong United States market and away from EU markets where new phytosanitary standards to prevent the spread of nematodes were applied to North American sawnwood and logs. Concurrently the Nordic exporters supplied timber to markets formerly served by Russian Federation coniferous sawnwood as Russian exports continued to fall. Sweden and Finland's exports were also stimulated through devaluations in the krona and the markka in 1991 and 1992. Sales and shipments are up again for these countries in 1994 and mills are said to be running at full, two-shift capacity with orders being taken for production several months out.

In the *former USSR*, apparent consumption continued to drop, by 26.6% in 1993 over 1992 with largest volume decreases in sawnwood, down 13.1 million m^3. The collapse of other sectors of the economy and high inflation reduced the effective demand for timber. Wood-based panels consumption dropped 17.3% and paper and paper board fell 26.9%. Forest products industries in the Russian Federation were having difficulties meeting domestic demand and despite the attractiveness of hard currency exports, the export organization remained sporadic.

Environmental concerns for some of North America's last old-growth forests continued to restrict harvesting in the Pacific Northwest and plans to achieve a compromise in the *United States* were attacked by environmentalists and industrialists alike. The lack of old-growth timber has had a negative effect on the supply of wood to the sawmills and panel producers resulting in mill closures, loss of employment and price rises.

Likewise tropical log and sawnwood export restrictions for environmental and industrial development reasons, ie increased domestic value-added processing, have limited supplies and driven prices up. The tropical timber market is also in the midst of a massive structural change as producers change toward sustainable forest management practices and production of timber to meet growing domestic timber needs simultaneously with the demand for exports. Producer countries are altering export practices and promoting value-added processing through industrial and market development as well as by taxes, tariffs and bans on exports. Consumers have established new supply channels and substituted temperate coniferous and non-coniferous species for formerly tropical applications. Certification schemes are being established for tropical and temperate timber alike by a number of public and private organizations and countries.

Recycling of wood fibre, especially waste paper, has had much greater success than ever imagined because of official mandates in European countries and market forces in North America. The oversupply of recovered fibre has had serious consequences on the markets for pulpwood and wood pulp. The result has contributed to the depression of the prices for these products and in some countries, a suppression of the profitability of necessary forest management practices such as thinnings and merchandising of pulpwood-sized logs.

Wood-based panels apparent consumption decreased slightly in Europe, for the fourth year, continued falling in the former USSR and rose in North America where demand increased with residential construction. As

Wood-based panels apparent consumption decreased slightly in Europe, for the fourth year, continued falling in the former USSR and rose in North America where demand increased with residential construction. As sawnwood supply constraints induced price increases, composite and engineered wood products continued to be substituted when more economical. Consumption of OSB (oriented strand board) and MDF (medium density fibreboard) continued growing and additional manufacturing capacity came on stream. With the exception of tropical plywood, prices for panel products generally increased (in North America by 13%).

Despite the above mentioned improvements in the solid wood sector and the wood-based panel sector, wood pulp and pulpwood remained depressed in 1993 with some encouraging, albeit small, signs o improvement in 1994; rising demand and prices i early 1994 resulted from partial economic recovery i Canada and western Europe and a lack of nev capacity. Basically the world has overcapacity i some commodity markets, like mechanical pulp an tropical plywood, which will keep prices down in th wake of moderate demand.

The UN-ECE Timber Committee, at its joint sessio in October 1993 with the FAO European Forestr Commission, forecast improved apparent consumptio for all forest products in 1994 in Europe and Nort America with overall increases in production an trade. Based on market reports in mid-1994, thes forecast trends appeared correct. Analogous forecast and information were unavailable for the CIS.

Table 1
Apparent consumption of sawnwood, wood-based panels and paper and paperboard in Europe, the former USSR and North America, 1990 to 1993

	Million units	Volume				Change 1992 to 1993	
		1990	1991	1992	1993 (prelim.)	Volume	Percent
							(%)
EUROPE							
Sawnwood	m3	106.37	97.68	94.91	91.32	-3.59	-3.8
Wood-based panels	m3	42.50	41.56	40.33	39.56	-0.77	-1.9
Paper and paperboard	m.t.	65.75	66.26	67.60	68.04	0.44	0.7
Total	m3 EQ a/	467.23	452.62	451.02	445.13	-5.89	-1.3
Increase on previous year							
- Volume			-14.61	-1.60			
- Percent			-3.1	-0.4			
former USSR							
Sawnwood b/	m3	98.97	74.70	47.68	34.55	-13.13	-27.5
Wood-based panels c/	m3	11.44	10.78	6.54	5.41	-1.13	-17.3
Paper and paperboard	m.t.	10.30	9.23	4.42	3.23	-1.19	-26.9
Total	m3 EQ a/	216.71	172.26	104.17	76.51	-27.66	-26.6
Increase on previous year							
- Volume			-44.45	-68.09			
- Percent			-20.5	-39.5			
NORTH AMERICA							
Sawnwood b/	m3	148.45	137.31	149.24	152.25	3.01	2.0
Wood-based panels c/	m3	36.12	32.70	34.25	35.72	1.47	4.3
Paper and paperboard	m.t.	83.03	82.33	83.70	86.41	2.71	3.2
Total	m3 EQ a/	597.43	569.32	596.27	612.73	16.46	2.8
Increase on previous year							
- Volume			-28.11	26.95			
- Percent			-4.7	4.7			

a/ Equivalent volume of wood in the rough.
b/ Excluding sleepers.
c/ Excluding veneer sheets.

Chapter II

ECONOMIC SITUATION OF EUROPE AND NORTH AMERICA -- 1993 AND EARLY 1994

A. OVERVIEW OF DEVELOPMENTS IN 1993

(i) Recession in western Europe and Japan, recovery in Northern America

For the past year, *western Europe* has been in one of the severest recessions of the post-war period. Nevertheless, for the west European countries combined real GDP fell, only slightly, by 0.1 per cent compared with 1992 (table 2). But the aggregate figure conceals sizeable falls in output in a number of individual countries. The recession persisted in *Japan* against a backdrop of severe imbalances in the business sector.

In *North America*, the recovery gained strength in the second half of 1993 led by strong consumer and investment demand, both of which responded to very low interest rates. There was a striking surge of activity in the United States in the final quarter of 1993 which appears to have continued in the first quarter of 1994. For 1993 as a whole, real GDP rose by 3% (table 2).

For all industrialized countries combined, real GDP rose by only 1.2% in 1993, declining output in western Europe and stagnation in Japan being more than offset by the favourable economic developments in North America.

Against a background of falling prices in international commodity markets, inflationary pressures remained subdued in the *western European* market economies in 1993. Weak domestic demand, high margins of idle production capacity, and moderate wage increases due to the deterioration in the labour markets were the main factors behind the slow-down in the average rate of inflation in western Europe to 3.3% in 1993.

In the *United States* inflationary pressures remained rather low in 1993, mainly a reflection of falling world market prices for energy and raw materials and strong productivity gains in manufacturing industry, which were only partly offset by increases in labour costs. In the event, the annual inflation rate was 3%, unchanged from 1992. With output set to continue growing faster than the expansion of capacity, more of the slack in the economy will disappear in 1994, suggesting that the process of disinflation probably bottomed out in 1993.

Table 2
Macroeconomic indicators for western Europe and the United States, 1991-1994
(Percentage change over previous year)

	1991	*1992*	*1993*	*1994*
Western Europe				
Real GDP	1.2	1.1	-0.1	1.5
Inflation [a]	4.9	4.0	3.3	..
Employment [b]	0.1	-0.6	-1.6	-0.5
Unemployment [c]	8.1	8.9	10.3	11
General government financial balance [d]	-4.3	-5.2	-6.9	-6.5
Current account balance [d]	-0.8	-0.8	-0.2	..
United States				
Real GDP	-0.7	2.6	3.0	3.5
Inflation [a]	4.2	3.0	3.0	..
Employment [b]	-1.1	0.2	1.5	1.8
Unemployment [c]	6.6	7.3	6.7	6.3
General government financial balance [d]	-3.4	-4.5	-3.6	-2.5
Current account balance [d]	-0.1	-1.1	-1.7	..

[a] As measured by the consumer price index.
[b] Employment based on national accounts statistics.
[c] As a percentage of total labour force.
[d] As a percentage of GDP.
Source: ECE/DEAP based on national and international statistics.

The sharp cyclical downswing has led to a considerable deterioration in the *labour market* in western Europe, where total employment fell by about 1.5% in 1993. Against this background the number of persons unemployed in western Europe rose by some 2 million to an average of nearly 19.5 million in 1993. The average unemployment rate was 10.3% compared with 8.9% in 1992.

In the *United States* employment growth picked up in 1993, a reflection not only of the strengthening of output growth in the course of the year but also of the usual lag between changes in output and the demand for labour over the growth cycle. The unemployment rate fell to 6.7% in 1993.

The recession in *western Europe* was reflected in a sharp fall in import demand in 1993 which, given the importance of intraregional *trade*, was also reflected in falling exports. Weak import demand in western Europe, in turn, has been a major factor in a further slow-down in the volume growth of world trade. International trade was supported, however, by continuing strong import demand in North America and the developing countries. The volume of world trade is estimated to have grown by some 2.5% in 1993 following an increase of 4.5% in 1992.

The stance of *monetary policy* in *western Europe* has become more relaxed in the wake of the crisis in the ERM in September 1992. Short-term interest rates started to fall and long-term rates fell further. For countries within the ERM the pace of interest rate reduction was restrained, however, by the cautious policy of the Bundesbank. Tensions in the ERM continued in the first half of 1993, possibly reflecting financial market perceptions that exchange rate targets were incompatible with domestic economic conditions. These tensions culminated in heavy speculative pressures on several currencies at the end of July 1993 and led governments to widen the fluctuation margins within the ERM from 2 August 1993. Tensions in the foreign exchange markets receded in the second half of the year.

In the *United States*, the relaxed stance of monetary policy was maintained and short-term interest rates hardly changed in the course of 1993. But against a background of buoyant economic activity the Federal Reserve has increased the federal funds rate several times in the first half of 1994 in order to signal its determination to prevent a rekindling of inflationary pressures.

Fiscal policies in *western Europe* were mainly directed at restraining a further rise in already large government budget deficits, but this proved to be difficult in a recession. There was a general rise in government budget deficits in western Europe to an average of about 7% of GDP in 1993, largely a consequence of the operation of the built-in stabilizers, which supported domestic demand. In the *United States* fiscal policy continued to be restrictive, a reflection of the overriding objective of curbing the structural budget deficit.

(ii) Deep economic depression for transition countries

Nearly four and a half years after the collapse of the communist regimes in *eastern Europe* and the *former Soviet Union*, most of the region is still in a deep economic depression. However, in most of eastern Europe the fall in output last year was generally much smaller than in 1992 and for a number of countries there are clear signs of a recovery in activity. In Poland GDP rose by 4% last year, thus extending the recovery that began in 1992. There was also a significant recovery of total output in Albania where there has been a sharp increase in agricultural production. GDP also increased, albeit modestly, in Romania and Slovenia, while the data on industrial production suggest that the recession is levelling out in the Czech Republic and that output has been rising in Hungary. However, output has continued to fall with little respite in the south European transition economies (excepting Slovenia and Albania) and especially in Former Republic of Yugoslavia and the Former Yugoslav Republic of Macedonia. Altogether, total output in eastern Europe last year probably fell by something of the order of 3%, which is less than half the rate of decline in 1992.

In *Russia* and the other members of the *CIS*, the collapse in output continued virtually unchecked last year, with an average fall of some 13% following a 20% drop in 1992. In the CIS the depression has been greatly intensified by the collapse of trade among the highly interdependent member states. This was largely the result of a failure to overcome the monetary and payments problems which arose in the wake of the break-up of the Soviet Union and which finally led to the break-up of the rouble zone in the latter half of 1993. Most of the CIS members are thus facing an additional trade shock in the form of a large deterioration in their terms of trade with Russia and other suppliers of energy, as the latter raise their prices to world market levels, as well as interruptions in

deliveries (especially oil and gas) because of non-payment of debts and bureaucratic confusion in the inter-state distribution systems.

Similar problems, of higher prices and interruptions of oil and gas deliveries from Russia, were also disruptive in the *Baltic States* in 1990-1991, but since their departure from the rouble zone in 1992, production has been badly hit by the loss of markets in the former Soviet Union. With the introduction of tough stabilization policies, the Baltic states have experienced some of the most severe depressions of all the transition economies. Nevertheless, there does appear to have been some levelling out in the decline of total output in Estonia last year.

(iii) International trade agreements

In 1993 and early 1994, a number of trade agreements were signed or came into force including the GATT Uruguay Round, European Economic Area and the North American Free Trade Agreement. The GATT agreement established rules to liberalize trade through the systematic reduction or elimination of tariff or non-tariff barriers and to negotiate unfair trade practice complaints. It is generally considered as a much needed reinforcement of the liberal trading system, which enhances prospects for trade expansion and economic growth. A stable and comprehensive international framework of rules is also of great significance to support and underpin liberal system in the transition economies of eastern Europe and the former USSR. As a part of the agreement to be ratified, GATT ceases to exist in 1995 and will be replaced by the World Trade Organization.

Some countries' forest and forest products industries expressed disappointment in the outcome of the Uruguay round because their objective of worldwide elimination of tariffs on wood and paper products was not met. Japan offered to cut its base rate tariffs by 50% over a 5-year period, a reduction of approximately 30% of currently applied tariffs. The offer reduces tariffs on some 60% of Japanese wood and wood products to a range of 2.6 to 10%. The failure to eliminate tariffs caused European countries to reduce tariffs by approximately 44%. Thus wood and paper products remains one sector for additional negotiation.

The European Economic Area created the world's largest trade zone as 372 million people in the 12 EU countries plus the EFTA countries (with the exception of Switzerland), several of which are in the process of joining the EU as well. The North American Free Trade Agreement linked 367 million people in Canada, Mexico and the United States into a common market with goals similar to the EEA, ie harmonized trade policies and tariff-free trade. Meanwhile an Asia Pacific Economic Cooperation forum met to consider another trading partnership.

B. WESTERN ECONOMIES

(i) Factors in recent economic performance

A major feature of the current economic situation is the striking desynchronization of the international business cycle, with much of *western Europe* struggling to get out of recession while recovery has already gained considerable momentum in North America.

In the *United States* the favourable economic performance in 1993 was mainly due to the stimulus which a very relaxed monetary policy provided to interest-sensitive components of demand, namely business fixed investment, housing and consumer durables.

In *western Europe* the disappointing performance reflects the interplay of several factors. The sharp cyclical downswing was associated with steep falls in business and consumer confidence in western Europe in the second half of 1992. In the second half of 1993, however, business confidence began to recover: the decline in output had bottomed out, inventories had been adjusted to more comfortable levels, and there was a gradual improvement of export prospects.

High real interest rates have continued to restrain economic activity. In *Germany*, relatively high inflation in the wake of the unification boom and growth in money supply far above the Bundesbank's target range had led to a significant tightening of monetary policy until summer 1992. The ensuing rise in interest rates was propagated to the rest of western Europe via the ERM and intensified the recession.

Recovery from the recession has subsequently been protracted by the cautious policy of interest rate reductions pursued by the Bundesbank since September 1992, a caution which was not anticipated by the other west European countries. One reason for the disappointing outcome in western Europe in 1993 was the unexpected severity of the recession in west Germany, the weakness of domestic demand being reinforced by the faltering of demand from abroad.

Triggered in several countries by asset price deflation against a background of high debt-income ratios, the process of balance sheet adjustment has made progress; this nevertheless continued to restrain both consumers' demand and bank lending. Moreover, high and rising unemployment, in conjunction with low earnings growth, depressed real disposable incomes and this was reflected in very low consumer confidence. Households have increased savings against a background of increasing uncertainty about future incomes.

Finally, the business sector responded to high real interest rates and the faltering of demand by cutting investment, although the sharp downturn of fixed investment should also be seen against the background of the investment boom in the second half of the 1980s.

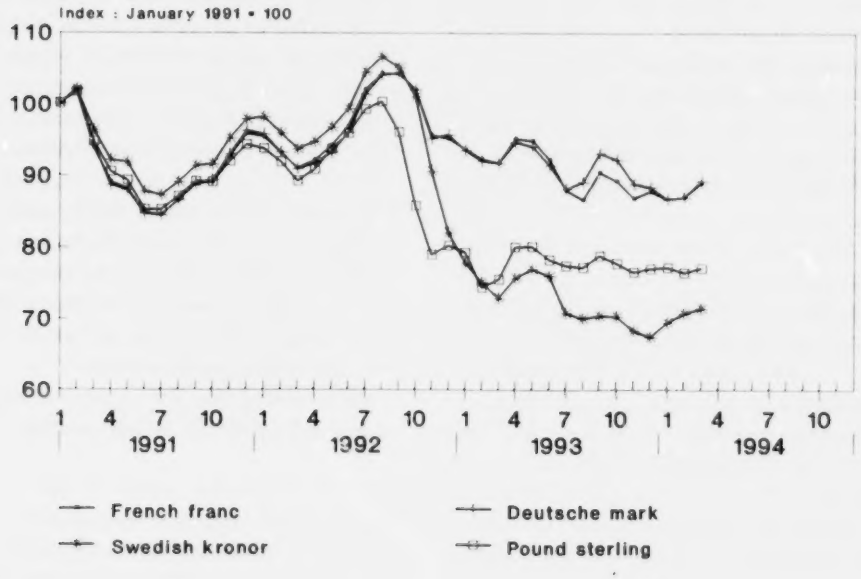
The increasing economic integration of western Europe has led to a close synchronization of the growth cycles in individual countries: the weakening of domestic demand therefore tends to be mutually reinforcing, a feature which in 1993 was only partly offset by the strong demand in overseas markets. It should be emphasized that some 70% of all merchandise exports originating in the various west European countries are destined for other west European countries. Other markets are of relatively small importance: for example, Asia and North America each accounted for some 7 to 7.5% of total west European exports in 1992.

Thus, with the entering into force of the "single market", it is worth recalling that western Europe, in aggregate, is a rather closed economy – as is the United States –, with total exports to the rest of the world currently accounting only for some 10% of GDP. The implication of this is that recovery in western Europe will have to be based on "domestic" sources of growth.

(ii) Monetary policy

The stance of monetary policy was slowly relaxed in *western Europe* in the course of 1993 while in the United States it remained unchanged. Overall, therefore, the differences between western Europe and the United States narrowed in the course of 1993 (graph 1).

Graph 1
Exchange rates of selected currencies against the United States dollar, 1991 to 1994



he Bundesbank cut the discount rate, which provides floor to short-term money market rates, in six steps rom 8% in February 1993 to 5.25% in February 1994. hort-term interest rates have also fallen in the other est European countries where, given the exchange rate onstraint, official interest rates are lowered more or ss in tandem with those in Germany. In the *United ingdom*, monetary policy was substantially eased in utumn 1992 following the suspension of membership the ERM, a policy which was accompanied by a gnificant depreciation of sterling.

he crisis in the *European foreign exchange* markets ontinued in the first half 1993 leading to the epreciation of the Irish pound in January and of the ortuguese escudo and the peseta in May 1993. The nlargement of the fluctuation margins was announced s a temporary measure only, but the crisis in the ERM as led to questioning the timetable for introducing a ommon European currency by 1999.

n the *United States* short-term interest rates hovered round 3.1 to 3.2% in the course of 1993; in real terms ney were negative during the first six months of the ear and were only 0.5% in January 1994. But the onetary authorities have been careful to forestall any kindling of inflationary pressures and, against a ackground of strong output growth and a marked rise n industrial capacity utilization, the Federal Reserve ncreased the federal funds rate in 1994.

he other prominent feature in the foreign exchange arkets was the strong appreciations of the yen against ne dollar in the first half of 1993 and again in mid-994. The reason for this appreciation is essentially the ery large trade surplus, notably with the United States, ne correction of which is generally seen to require a ajor appreciation of the Japanese currency.

gainst a background of heavy speculative selling ressures against several currencies, the decision was aken on 2 August to widen the existing permissible luctuation margins from ±2.25% or ±6% to ±15% round central bilateral parities, which remained nchanged. The only exception is the exchange rate etween the deutsche mark and the Netherlands guilder hich, in a separate bilateral agreement between the wo governments, will be maintained within the old arrow band of ±2.25%.

(iii) Output and the components of demand

The recession is widespread in *Europe*. Real GDP fell in 10 out of 17 west European countries in 1993 (graph 2). Among the four largest economies, real GDP rose only in the United Kingdom. The largest falls were in Finland and Sweden, where total output fell by more than 2%. The major drag on economic activity in western Europe stemmed from the deep recession in western Germany: real GDP declined by a considerable 1.3%. In contrast, the recession was much milder in France and Italy, where real GDP declined by less than 1%.

For Finland and Sweden the recession has already lasted for three years and has taken a heavy toll of the economy. In Finland real GDP in 1993 was 13% lower than in 1990, the deepest recession experienced by this country in this century. In Sweden GDP declined by 5% over the same period, much less than in Finland, but still the worst Swedish economic crisis since the Second World War. But in both countries the economic downturn appears to have finally bottomed out in the course of 1993.

Industrial output and fixed investment

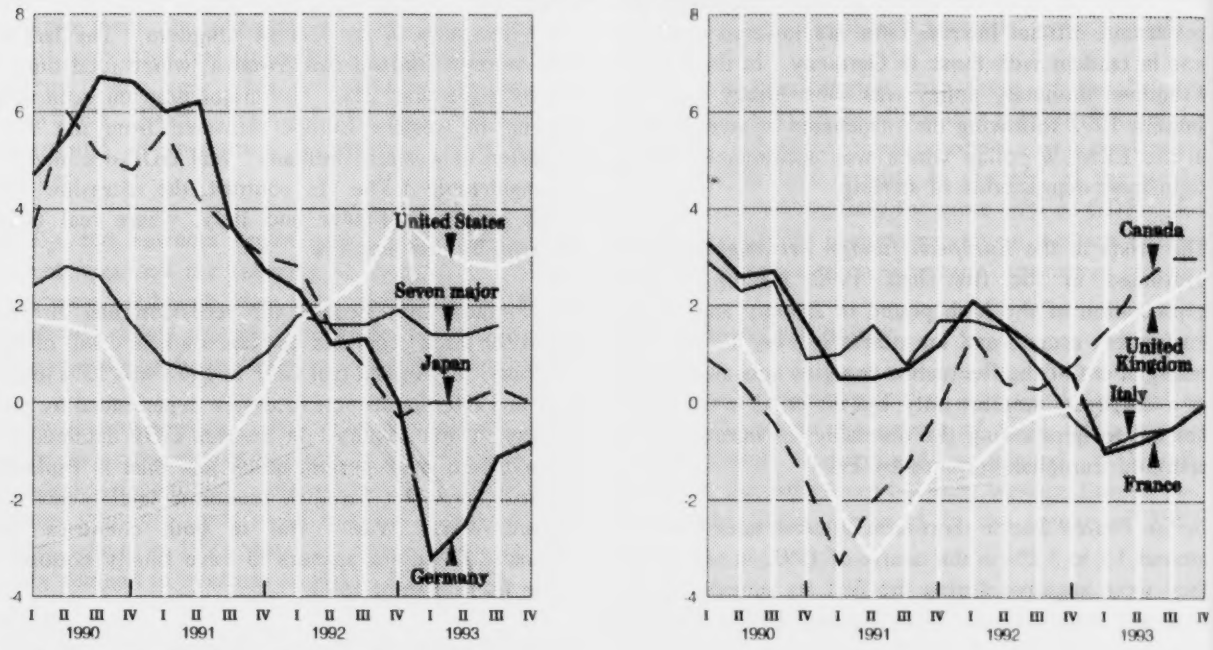
Industrial output, excluding construction fell by 2.5% in *western Europe* in 1993, the third consecutive year of decline (table 3).

In the *United States* industrial output rose by 4.5% in 1993, buoyant demand for investment goods (including motor cars) and consumer durables being the main factors behind the acceleration.

Against a background of weak demand and falling capacity utilization rates in the business sector, as well as tight public sector budgets, there was a sharp fall of 4.5% in gross fixed capital formation in *western Europe* in 1993 (table 4).

Business expenditures on machinery and equipment *investment* fell by some 7%. Construction investment fell by some 2.5%. Demand for industrial buildings and housing was weak and public investment was restrained by efforts to cut high government budget deficits.

Graph 2
Real GDP in the seven major industrialized economies, 1990 to 1993
(percentage change over the same quarter of previous year)



Sources: National statistics.
Note: Data for Germany pertain to west Germany.

Fixed investments were also held back by high real rates of interest. Although long-term rates fell in the course of 1993, their potential stimulus will be felt only with a lag.

For *western Europe*, 1993 was the third year of falling investment, entailing a cumulative fall of about 6% since 1990. As can be seen from table 4, the cumulative downturn has been particularly severe in Finland and Sweden, where the volume of fixed investment fell by some 45% and 30%, respectively. There were pronounced falls in fixed investment in France, Germany and Italy in 1993. In France this continued a downturn which began in 1991. The aggregate decline in Germany reflects a much larger fall, by about 7%, in the western part of the country, which was partly offset by the continuing strong growth in the east of public infrastructure investment and investment spending by the business sector, in the main by western German firms.

(iv) Recent changes in consumer prices

Against a background of deep recession in *western Europe* there was a further slow-down in inflation in 1993 to a rate of 3.3% compared with an average of 4% in 1992. By the end of 1993, consumer price inflation had fallen to rates not seen in the majority of countries for nearly three decades. For the ECE market economies combined the annual inflation rate fell to 3.1% in 1993, only slightly lower than in 1992. The important exception was *western Germany* where the annual inflation remained quite high in 1993: for the year as a whole the increase was 4.1%, the same as in 1992. A major factor behind the rise in service prices (by more than 6%) in 1993 was the increase in administered prices. The price level was also raised by the increase in VAT at the beginning of 1993. But the average annual inflation rate hides a weakening of inflationary pressures in the second half of 1993.

Despite the recovery in activity, inflationary pressures remained subdued in *North America*, although the process of disinflation appears to have petered out: the increase in the consumer price index was 2.9% for 1993 as a whole, the same as in the previous year. In the *United States* the annual inflation rate was 3% in 1993, the same as in the previous year.

Table 3

Industrial output in western Europe and North America, 1991-1993 (Percentage change over previous year)

	1991	1992	1993
estern Europe	-0.3	-0.9	-2.5
major countries	-0.4	-1.3	-3.0
ance	-0.1	-1.1	-3.5
ermany [b]	2.9	-1.9	-7.5
aly	-2.1	-1.6	-2.5
nited Kingdom	-4.0	-0.5	2.5
3 smaller countries	-0.1	-	-0.5
ustria	1.6	-1.1	-2.0
elgium	-2.0	-0.1	-5.5
enmark	..	..	..
inland	-9.8	2.5	5.0
reece	-1.4	-1.2	-2.0
eland	3.2	9.3	5.5
etherlands	3.9	0.2	-1.0
orway	2.1	6.4	4.0
ortugal	0.1	-2.4	-5.0
pain	-0.7	-2.9	-4.5
weden	-5.6	-4.0	2.0
witzerland	0.5	-0.5	-
urkey	1.8	4.2	8.0
North America	-2.0	2.2	4.5
nited States	-1.9	2.4	4.5
anada	-3.7	0.4	5.0
Total above	-1.2	0.6	1.0
Memorandum item:			
Japan	1.8	-5.7	-4.5
Total above, including Japan	-0.6	-0.6	-

[a] Preliminary estimates rounded to the nearest 0.5 percentage point.

[b] West Germany.

Sources: National statistics; OECD, *Main Economic Indicators*, Paris, various issues and ECE secretariat estimates.

Table 4

Real gross fixed capital formation in western Europe and North America, 1991-1993 (Percentage change over previous year)

	1991	*1992*	*1993*
Western Europe	-0.9	-0.5	-4.5
4 major countries	-0.6	0.3	-4.3
France	-1.5	-2.0	-5.4
Germany [a]	6.1	4.2	-3.3
Italy	0.6	-1.4	-8.1
United Kingdom	-9.8	-1.6	0.4
13 smaller countries	-1.5	-2.1	-4.9
Austria	4.9	2.7	-2.6
Belgium	-1.7	1.0	-7.1
Denmark	-5.4	-8.2	-1.1
Finland	-20.3	-17.3	-18.2
Greece	-4.4	1.2	3.2
Ireland	-7.3	-1.9	0.5
Netherlands	0.4	1.1	-3.8
Norway	1.0	3.5	17.6
Portugal	2.4	5.7	1.0
Spain	1.6	-3.9	-10.3
Sweden	-8.4	-11.0	-16.2
Switzerland	-2.5	-5.0	-4.3
Turkey	-0.5	3.7	5.1
North America	-7.0	5.3	9.7
United States	-7.7	6.2	11.0
Canada	-2.0	-1.3	0.7
Total above	-3.4	1.8	1.4
Memorandum item:			
Japan	3.0	-1.0	0.2
Total above, including Japan	-1.9	1.1	1.1

[a] Data refer to total Germany (east + west) as from 1992.

Source: National statistics.

(v) World commodity prices

The protracted recession in the *European* industrialized countries has put considerable downward pressure on world market prices of oil and most non-energy products which, in 1993, fell more than in 1992 (graph 3). One factor in the fall in non-energy prices was the increased supply of metals from eastern Europe and the former Soviet Union. *World commodity prices*, measured by the HWWA commodity index[1], fell by 16.5% in United States dollar terms in the 12 months to December 1993. Allowing for the appreciation of the United States dollar, the fall was still a considerable 8.4% on an ECU basis. Most commodity prices fell except those for food, which increased by 12.9% in dollar terms and nearly 24% in ECUs over the 12 months to December 1993.

[1] Produced by the HWWA (Institute for Economic Research, Hamburg), this index weights world market prices (in dollars by the relevant commodity shares in total imports of western industrialized countries in 1974-1976.

(vi) Foreign trade and payments

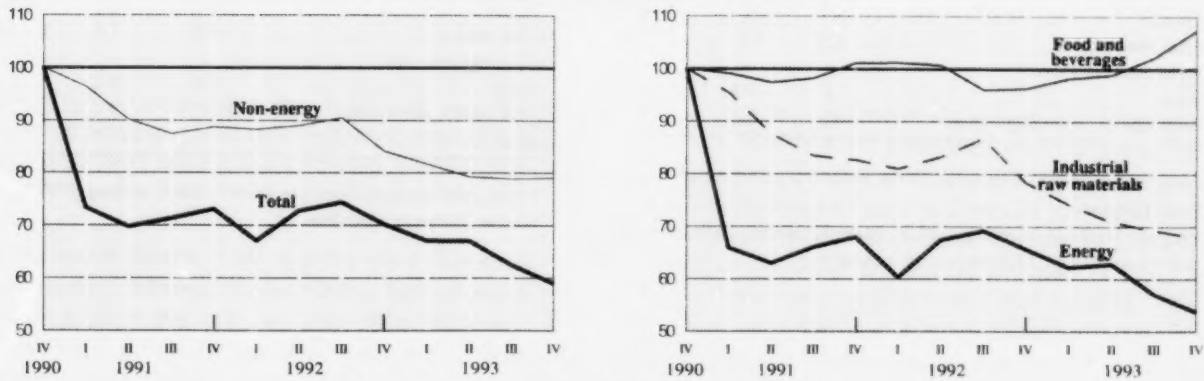
There was a marked slow-down in the volume growth of world merchandise trade in 1993, to a rate of some 2.5 to 3% compared with 4.5% in 1992. However, an accurate assessment of changes in international trade in 1993 is difficult because of a new reporting system (Intrastat) for trade within the European Union, which was introduced at the beginning of 1993 in connection with the start of the "single market". According to the new system, cross-border transactions within the European Union are no longer recorded by customs offices but rather reported directly by companies to statistical offices. Trade with countries outside the EU countinues to be recorded by customs. Only transactions exceeding a certain minimum value, which can vary from country to country, need to be reported. There have been many teething problems with the new system which have led to unusually long delays in the publication of the trade statistics and to perceived biases in the measured trade flows. In general, the volume of trade appears to have been underestimated in the partial statistics available so far. The effects of thi change are evident in the lack of some countries' intra EU forest products trade data in Chapter IV.

(vii) The short-term economic outlook

The short-term outlook is for a modest cyclica recovery of output in *western Europe*, with all th major components of domestic demand remainin sluggish. Private consumption will continue to be hel back by moderate or zero growth in real income against a background of falling employment an considerable wage restraint.

In many countries hopes for a strengthening o household demand are therefore based on th assumption that the impact of weak income growth o purchasing power will be offset by a fall in savings But this is very uncertain given the depressed state o consumer confidence and the expectation of a furthe deterioration in the labour market. No support is likel to come from public consumption given the tightenin of fiscal policy.

Graph 3
World market prices of raw materials, 1992-1993
(1990 IV Q=100) (in United States dollars)



Source: Hamburg Institute for Economic Research (HWWA), *Intereconomics*, Hamburg (bi-monthly).

Fixed investment will remain weak against a background of large margins of excess capacity. The downturn of the inventory cycle has apparently bottomed out, and with a moderate improvement in the overall economic environment, there might be some increase in stockbuilding. As has so often been the case in the past, hopes for a recovery from recession are largely pinned on a gradual, but sustained, strengthening of net exports in 1994.

The demand for foreign goods within western Europe, however, is unlikely to strengthen significantly, given the pervasive weakness of domestic demand. In contrast, export demand from overseas markets should remain robust, a reflection of the continuing rapid economic growth in developing countries and strong import demand from the United States.

Although the mid-1994 depreciation of the United States dollar may not be favourable, GDP in western Europe was expected to rise on average by some 1.5% in 1994, a rate of increase too low to prevent a further fall in employment. Unemployment will therefore increase to record levels in 1994. Inflationary pressures are likely to remain subdued against a background of weak domestic demand and moderate growth in labour costs. In the *United States* the cyclical upswing will continue: real GDP is likely to increase by some 3.5% in 1994, supported mainly by private consumption and business fixed investment. Fiscal policy will be tight and monetary policy has started to move from a relaxed to a more neutral stance. The slight upward pressure on short-term interest rates will probably be accentuated in the course of 1994 given that the expansion of output can be expected to lead to a significant reduction in spare capacity.

In *Japan* the recession appears to be gradually bottoming out, but only very weak growth can be expected in 1994.

Thus, for the western industrialized countries as a whole, real GDP growth this year is likely to be only slightly above 2%.

C. TRANSITION ECONOMIES

(i) Level of activity

Although not a single post-communist country has been able to avoid the long and deep recession[1] which has followed the political and economic revolution of 1989, there are very large differences among them in the extent to which they have suffered. The recession has been *relatively* less prolonged in the Czech Republic, Hungary, Poland and Slovenia where, on current indications, gradual recovery may now be emerging. These countries have progressed further in the transformation of their economies and in their integration with the larger European economy in terms of trade and foreign investment. However, despite the considerable progress that has been achieved, this advanced group of transition economies still faces considerable problems in the areas of macroeconomic stabilization, the privatization of large state-owned enterprises and the reform of the banking system. Even in this group, with the possible exception of the Czech Republic, there is still widespread disillusionment with the transition process and dissatisfaction with the fall in living standards: the essentially political task of organizing and maintaining popular support for the ultimate objectives of market-based economies and democratic institutions remains as urgent as ever.

The recent recovery of activity in some of the transition economies must also be kept in the perspective of the depth of the recession: if Poland is able to maintain its current growth rate of some 4% a year it will still take until 1997 before the level of output in 1989 is surpassed. This is but a crude piece of arithmetic which ignores changes in the quality of output (and of consumption), but it nevertheless provides a broad indication of the scale of the problems facing national governments.

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[1]There are many reasons for doubting the accuracy of the output and other statistics in the transition economies at present, and it is possible that the offical figures overstate the depth of the fall in output. Until the national statistical offices revise the data, the extent of the errors will remain essentially unknown. It seems unlikely, however, that the slump in output will be statistically revised into a mild recession.

In the other transition economies the range and intensity of problems is rather greater, although they are difficult to place in neat categories. Some of them (Albania, Bulgaria, Romania and the Baltic states, for example) have initiated major reforms and have made significant headway, but their problems of adjustment and stabilization are such that they are even more vulnerable to setbacks than the advanced group discussed above. In many of the countries of the former Soviet Union and former Yugoslavia, the problems of economic transition have had to take second place while problems of political stability and national identity are addressed. Consequently, institutional transformation is held back and problems of economic stability tend to become acute.

(ii) Changes in the structure of output

The transformation of the former centrally planned economies involves not only a radical restructuring of institutions and behavioural patterns, but also considerable changes in the distribution of economic activities. The liberalization of foreign trade and the adoption of decentralized price-setting in free markets have led to large changes in the relative prices facing actual and potential producers of particular goods and services. Parts of the existing capital stock will have been rendered unprofitable and will have to contract or be retired, while other, potentially more profitable, activities will attract new investment, domestic and foreign, which will lead to an expansion in productive capacity. This process is still in its early stages, but although the limitations of the statistical data prevent any detailed examination, some of the changes are already visible.

In terms of the broadest sectors of the economy the most apparent change in eastern Europe is the expansion of *services*. In the space of just two years (1990 to 1992) their share of GDP has risen by 7 to 8 percentage points in Hungary and Poland, and by even more in Bulgaria. The expansion of the services sector is one of the most conspicuous breaks with the former, centrally planned regime and reflects not only the growth of small-scale enterprise in retail trade, restaurants etc., in part a result of successful

Table 5
Basic economic indicators for central and eastern Europe and the former USSR, 1989-1993
(percentage change over the same period of preceding year)

Country group/indicator	1989	1990	1991	1992	1993*
Central and eastern Europe					
Net material product[1]	-1.4	-7.9	-12.3	-7.4	-3.0
Gross industrial output	-0.5	-15.1	-18.1	-10.0	-4.0
Gross agricultural output	0.8	-3.5	-2.1	-14.1	-1.9
Gross investment	-1.5	-11.9	-17.6	-5.9	-8.0
Exports[2]	-2.8	-10.8	-6.9	-4.8	-2.1
Imports[2]	0.7	-5.6	-4.1	1.1	14.4
Former USSR/CIS[3]					
Net material product	-2.3	-3.4	-12.2	-19.9	-13.0
Gross industrial output	1.9	1.1	-7.0	-18.2	-14.6
Gross agricultural output	1.3	-2.6	-6.9	-9.0	-2.0
Gross investment	4.7	0.6	-11.7	-39.0	-14.0
Exports[4]	...	-14.0	-24.6	-25.2	1.4
Imports[4]	9.3	-1.4	-35.9	-21.3	-27.1

[1]NMP in general, but gross material product for Yugoslavia and in 1991, GDP for Hungary, Poland and Romania.
[2]Excluding Yugoslavia.
[3]Former Soviet Union for 1991 and earlier and CIS for 1992 and 1993.
[4]Russian Federation for 1992 and 1993.

Source: UN-ECE, *Economic Survey for Europe in 1993-1994*, 1994.

privatization, but also the creation of new financial, legal and business services which have an essential role to play in a market economy.

The total, *cumulative fall* of industrial output between 1989 and 1993 reached truly staggering proportions, especially in Bulgaria and Romania: these two countries have lost nearly half of their industrial production since 1989. Less dramatic, but still very large, were the losses in former Czechoslovakia. Even in Poland, where recovery has been going on for the second year running, the level of industrial output (sold) still remains more than a quarter below the 1989 peak.

Within the *manufacturing sector*, there has been a general collapse of output in all industries, but some have clearly suffered much more than others. Among the hardest hit are some of the traditional heavy industries, like iron and steel, parts of mechanical engineering and chemicals; also a number of high-tech activities such as telecommunications have been negatively affected. Among the relatively unscathed are printing and publishing, clothing and processed foods. This general impression from the output figures is supported by the data on international trade. Exports of textiles, clothing and other labour-intensive products have done better than average, as have certain foodstuffs, chemicals (e.g., fertilizers), timber products and other resource-based manufactures. Pulp and paper and food processing performed relatively well in Poland and the Czech Republic, but much less so in Bulgaria and Hungary. It can also be observed that the (relative) expansion of some branches has clearly been driven by increase of exports: this was certainly the case for the clothing and food processing industries.

These observations refer to such a short period that it would not be justified to use them to draw strong conclusions about changing comparative advantages. Nevertheless, the changes do suggest the following developments in the structure of industrial production in eastern Europe and the Baltic states: first, a shift away from excessive production of heavy capital goods towards more consumer goods; and secondly, an increased share in total output of labour-intensive and internationally standardized, intermediate products in the production of which the eastern countries are relatively competitive on international markets.

The proximate causes of the production slump in *Russia and other CIS states* seem to be more complex and should be sought in a devastating combination of weak, distorted, or non-existent market institutions, and continued macroeconomic instability. Slack contractual discipline in fulfilling orders and making due payments disrupts output plans and the lack of adequate banking mechanisms for prompt settlement of accounts reduces incentives for firms seeking to expand their activities. Massive non-payments and the acute shortage of financial resources, along with insufficient effective demand, are commonly cited by enterprises as the main constraints on output. This poses particular problems in the context of cross-border deliveries and settlements between CIS countries and is a major factor in the continuing decline in intra-CIS trade. Reduced supplies of fuels from Russia to other CIS states may be the single most important factor behind output decline in the latter countries. But similar problems arise from the high degree of specialization and large size of manufacturing production units in the former Soviet Union. The source of many vital manufactured production inputs is a sole or majority supplier now cut off from its clients by an international border.

(iii) The outlook for 1994

In eastern Europe, the economic recovery in a small group of countries is a great relief to policy makers, but it must also be recognized that it is still very fragile, and given the depth of the recession, also very modest. Inflation rates and budget deficits remain high and government policies are still constrained by the need to reduce them. Moreover, the recovery of domestic demand, and in some cases an overvalued exchange rate, have led to a rapid deterioration in the external accounts of many countries.

The recovery that got under way in 1993 in several countries of eastern Europe now seems very likely to continue in 1994. Growth is set to continue in Poland at around 4% and a recovery is expected to emerge in Slovenia and the Czech Republic with growth rates of perhaps 1 to 2%. The outlook is more problematic for Hungary, where forecasts range between a continued fall in output and a mild recovery, and for Romania where the recent austerity programme agreed with the International Monetary Fund seems likely to produce zero growth this year. In Bulgaria and Slovakia large domestic imbalances imply at best a year of stagnation or even another fall in output. In the states of the former Yugoslavia, other than Slovenia, the fall in output is likely to continue, although in Croatia, at least, at a lower rate than in 1993. Altogether, aggregate output in eastern Europe might rise in 1994, perhaps by a modest 1%, but it would be the first year of growth since the collapse of the old system.

There seems to be little chance of the decline in output coming to an end in 1994 in Russia and most of the other CIS countries. In Russia, the key question is whether the paralysis in macroeconomic policy, which has characterized most of the past year, can be overcome in order to provide some chance of meeting the targets, recently agreed with the IMF, for reducing inflation and the federal government's budget deficit. If the deficit target is met, the probable reduction in subsidies to state-owned enterprises might lead to a much larger cut in output than the 8-10% currently envisaged by the government. If the deficit target is *not* met, the chances of a significant fall in the inflation rate are reduced and the continued supply of IMF funding placed at risk. In Ukraine and Belarus there seems little prospect at present of any effective programmes of macroeconomic stabilization being put into place and neither the fall in output nor the extremely high rates of inflation which were moving across the threshold of hyperinflation in the last quarter of 1993 are likely to be halted in the near future.

D. CONSTRUCTION SECTOR

(i) Construction

A striking feature is the weakness of investment in 1993 in the United Kingdom, where the recovery, albeit moderate, has now been under way for nearly two years. The small increase in 1993 masks higher investment in the newly-privatized public utilities and public housing, which was offset by weakening expenditures in the trade and services sector.

The construction industry in *central and eastern Europe* has tended to contract rather faster than the economy as a whole in most countries, a reflection of the general collapse in fixed investment, of pressures to cut public expenditure (which in practice usually have a disproportionate effect on public investment), and of a fall in housebuilding. In the medium term, this decline in the construction sector can be expected to be reversed given the potential for industrial restructuring, the need for extensive infrastructure investment, and the social pressures for a renewal of the housing stock. The sector is also suited to small and medium-sized enterprises of which a very large proportion is already in private ownership. In the meantime, the construction sector continues to be restrained, not only by the continued weakness in total fixed investment, but also by the familiar transition problems of uncertain property rights, especially on land, continued price controls on private housing and office buildings, w financial institutions, and bureaucratic delays obtaining construction permits.

The volume of *construction activities* generally fell 1993 by larger margins than industrial output in m *eastern European* countries. Poland was the o country where a strong increase of construction out (by 13%) was registered. This was most proba concentrated in the production sphere, because hous construction fell by some 5%. Also, preliminı estimates point to a small upturn in Romania (by 1 In other countries, the drop of construction activit varied from 4% in the Czech Republic to 23% Slovakia.

For the *CIS countries*, indicators published so far rel only to residential construction (including a roughly recovery in housing completions in Russia), a construction of educational and medical facilities; th show patchy performance but there is certainly no si of a sustained recovery in any CIS country. T continued decline in investment (see Table 6), whi had decelerated up to the middle of the year, gathe pace again in the last half of 1993 and contribut strongly to the slump in construction activi Recession in the construction sector continued in t *Baltic states*. Partial data for 1993 show a fall activity of 52% in Latvia and of 38% in Lithuan These losses are even larger than the very substant declines registered in 1992, when the volume construction output fell in the two countries by 51 a 26%, respectively.

(ii) Housing

The world's largest housing markets, the United Stat and Japan both improved in 1993 over 1992 w resulting in strong demand for timber products f construction, millwork, cabinetry and furniture. boom in the United States housing market came after slow start in 1993 and single family construction w lifted to 1.3 million housing starts, back to levels of t 1980s. The United States housing market in 19 benefited from interest rates which were at their lowe point in the last 25 years. United States housing star continued to increase 21.1% in the first half of 19 over the same period in 1993 despite increasing interc rates which have reached their highest levels in over years, at 8.9% for a conventional 30-year mortgage.

While such main *Japanese* industries as stee automobile and household electric apparatuses

Table 6
Construction sector activity in European transition countries, 1990-1993
(Percentage change over same period of preceding year)

Country	1990	1991	1992	1993
Albania	-13.9	..	..	..
Bulgaria	-19.1	-59.3	-11.4	-13.7
Croatia[a]	-34.9	-34.4	-39.6	..
Czech Republic	-5.8[b]	-32.4	21.5[c]	-5.0[a]
Estonia	..	-10.6	..	..
Ex-GDR Lander[a]	1.8	1.1	36.2	..
Hungary	-15.6	-9.4	0.8	..
Latvia	..	-40.5	-51.1	-52.2
Lithuania	-15	..	-26.3	-39.0
The FYR of Macedonia[a]	..	..	..	..
Poland	-14.4	8.9	5.7	13.3
Romania	-36.6	-23.0	-29.4	..
Slovakia	-10.2[a]	33.1[a]	14.0[c]	-25.3
Slovenia	-10.8	-16.6	-10	-4
Yugoslavia (FR)[a]	-33.5	-7.3	-31.6	..

[a]Gross fixed capital formation (GDP coverage).
[b]Enterprises with 100 and more employees.
[c]Enterprises with 25 and more employees.
Sources: ECE secretariat common data base, national publications and direct communications. Aggregations use 1991 weights.

manufacturing industries suffered from the recession, residential housing increased 5.9% in 1993 from 1992 to 1,5 million units due to unprecedented low interest rates (below 4%), a pent-up demand from the 1980s and stabilizing land prices. This level was still below the recent high in 1990 of 1.7 million starts. Combined with overall strength, strong growth in wooden-housing starts is attributed to government support to upgrade the housing stock. Wood-frame houses in 1993 over 1992 were 47% of the total, up from 41% 5 years ago. By floor space, wood-frame in 1993 was 57%, up from 52% in 1988. The repair and remodelling market is valued at 35% of the value of new housing starts and was projected by *New Zealand Forest Industries* to increase 5% per year through 2000; wooden building materials used in this market segment were sawnwood, millwork and component parts. Japanese housing starts in 1994 are forecast for 1.47 million units, i.e., 1% less than 1993.

Canadian housing starts fell in 1993 by 7.6% to 155,000 units over 1992 due to continuing recession in Ontario and Quebec. But starts are predicted to increase 3% in 1994 to 164,000 units, still below the recent peak in 1992 of 168,000 homes and apartments starts.

The *European* housing market showed large variations between countries as they struggled from recessions. Total construction activity in Europe declined about 3% in 1993 and the situation is expected to remain at the same level in 1994. New residential construction ranks second, at 25% of the construction market, behind

Table 7
Housing starts, 1991 to 1994 (in thousands, monthly average)

	1991	1992	1993	1994[1]
Belgium	3.7	3.9		
Denmark	1.1	1.1	0.9	0.9
France	24.9	22.7	21.4	22.1
Germany		31.2[2]	36.0[2]	41.7
Netherlands	7.1	7.1	7.2	7.1
Norway	1.4	1.2	1.3	
Spain	16.8	17.2	17.9[3]	
Sweden	4.7	4.7	0.9	
Turkey		8.7[2]	7.3[2]	
United Kingdom	13.4	13.1	15.3	15.8
Canada	13.0	14.0	13.0	13.7
United States	84.5	100.0	107.1	
Japan	114.2	116.9	123.8	122.5
OECD	295.4	314.6		
European Union	67.0	65.1		

[1] Forecast
[2] Housing completions
[3] Estimation
Source: OECD and others

rehabilitation and modernization which accounted for an average of 32% of total building volume in western Europe in 1993. Residential construction has generally declined in Europe due to reduced purchasing power, risks of unemployment, high mortgage rates and high real estate prices. Conversely, the repair and remodelling market has shown positive development over the past decade, although 1993 was also down slightly. Other European countries show varying trends as seen in the table but one common element is the government-sponsored programmes to spur construction through measures such as mortgage assistance in terms of reducing interest rates and tax and other incentives.

The construction sector represents over 70% of the outlets for wood in *France*. General construction fell from 42.6 million m^2 in 1992 to 34.9 million m2 in 1993. Housing starts, which have fallen 42% in the last decade (1983 through 1993), continued to fall, by 7.6% in 1993 to 256,000 units, down from 277,000 in 1992. This was the lowest since the second world war. As is typical during a housing recession, the repair/remodelling/renovation sector increased 2.6%, a trend common for most of Europe. Expectation at the end of 1993 for 1994 was for an increase to approximately 265,000 units as a result of government incentives and lower interest rates; as of mid-1994 a 20% increase in housing starts was registered, but in general the construction industry remained subdued.

United Kingdom housing starts rose 19% from 1992 to 1993 to reach their highest level since 1989. The number of new housing starts during first 5 months of 1994, 80,100, was up 18% on 1993 period and best since 1989. Continued optimism about sustained recovery in the housing market was expressed by United Kingdom's housebuilders.

From 1990 through 1992 in *Germany*, construction activity was buoyant due to the needs for housing

despite the general economic recession. However in 1993 residential housing construction continued to expand while non-residential construction came to a standstill. Forecasts for 1994 are for these continued trends.

Scandinavian countries exhibited diverging trends in housing construction in 1993. The slight rise in Norway was due partially to lowered interest rates. A slight drop in *Denmark* should give way to improvements in 1994 due to tax reform and attractive financing. *Sweden* and *Finland's* economies were in recession in 1993 and housing suffered a complete collapse due to an erosion of consumer confidence, high unemployment, and high interest rates; forecasts for Sweden and Finland in 1994 were for a levelling out of the decline; some improvement in the domestic forest products markets, partially attributable to housing construction, were seen in early 1994.

(iv) Furniture

In 1993 the *European* furniture industry continued suffering from recession in major intra- and extra-EU markets and production of furniture decreased by 3.2% in value and 3.5% in volume; 1992 and 1993 were the worst years in terms of production and profitability for European furniture manufacturers since the beginning of the 1980s (table 8) Most EU countries decreased in production with the exception of the United Kingdom and Germany where improved housing markets translated to improved demand for furniture, and in Portugal. Otherwise demand was weak due to a lack of consumer confidence and high unemployment. The EU furniture manufacturing investments declined and the sector lost 40,000 jobs or 4% of total sector employment (source: FESYP, *1993 Annual Report*).

The *German* furniture industry had value increases in 1991 and 1992 of 10 and 5% respectively over the previous year, but in 1993 the production value dropped over 1992 by 2.6% and even more in volume, by 5.5% and the industry shed 6,666 jobs. Due to a demand for furnishings correlated to the increased dwelling constructions, the imports of furniture increased, especially from Italy, Poland (up 38%) and Slovenia (up 100%), partially because of the relatively strong deutsche mark. Exports fell in 1993 due to recessions in EFTA trading partners.

In *Italy* in 1993 the value of furniture produced increased 3.7% while the volume dropped 1%. Due to economic problems the domestic demand was very low in 1993 but exports, which represent one-third of production, rose by 15% reportedly due to increased competitivity and also a devaluation of the lira. With declining intra-EU exports, with the notable exception of exports up 30% to Germany, Italy increased market share in and exports to other major markets: up 19% to Switzerland, up 80% to the United States, etc.

Portugal deserves mention as the one European country which dramatically reversed the trends for 1993 and increased production by 14.9% in value and 7.0% in volume when compared to 1992. Responsible for these increases were productivity gains, concentration of the industry and industry investment. The majority of exports, which increased 6.0% to 24.5 billion escudos, were to EU countries; exports outside the EU fell 6.1% to 5.3 billion escudos.

Based on European furniture shows in late 1993 and 1994, there seems to be an upsurge in solid wood styles in alder, pine, maple and birch. These markets saw increased buying activity which was interpreted as a good omen for the industry in 1994.

In *central and eastern Europe and the CIS* the furniture sector status varies from country to country. Furniture production in the Russian Federation has never met demand and long waits, sometimes over one year, were common after the customer ordered furniture. And since large amounts of that furniture came from Comecon trading partners, the situation has become worse. In the war-torn former Yugoslavia, where furniture manufacturing was a prominent industry, only Slovenia has regular production. Asian furniture is said to have partially compensated the Yugoslavian export market void. In Romania, which was an important supplier to western Europe, the industry has deteriorated due to lack of raw materials, fittings, coatings, etc.

A FESYP evaluation of the current central and eastern European situation stated that stores have minimal stocks and people are unable to afford what is available. Western European manufacturers are capitalizing on low wage rates and making investments in these countries; for example in Poland, a day's wage for a furniture plant worker is about half of what is paid for one hour's work in Germany.

North American furniture production increased in 1993 over the previous year, driven on by United States housing construction and the resultant demand for furnishings. United States furniture imports increased 13% during the first 9 months of 1993 to $3.0 billion from $2.7 billion in the same period 1992. With

increased imports from China and several other southeast Asian nations, United States furniture imports are expected to top $4.0 billion in 1994. The 10 top sources of United States furniture imports, in order of 1993 are listed in table 9.

Table 8
European furniture production and trade, 1992 and 1993
(Percentage change 1993/1992)

Country	Production Volume	Exports Extra-EU	Exports Intra-EU	Imports Extra-EU	Imports Intra-EU
Austria	1.0				
Belgium	-7.4	7.3	-3.4[1]	12.0	
Denmark	-8.9	-9.4		16.7	
France	-5.0	-1.2	-13.7	7.6	
Germany	-5.5	-2.5	-10.0[1]	14.2	10.0[1]
Greece	9.4	100.0	100.0	17.0	-5.0
Ireland	-1.2				
Italy	-1.0	15.0[2]		11.0	-14.0
Netherlands	-1.0	6.4[1]	-4.0[1]	12.4[1]	
Norway	-5.3[3]	5.3[2]		-1.0[4]	
Portugal	7.0	6.0	6.1	15.8	
Spain	5.0[3]	4.2	2.6	-1.0	
Sweden		10.0[2]		-6.0[4]	
Switzerland		-7.7[2]		-7.2[4]	
United Kingdom	2.0	16.0	-22.5	18.6	

[1]Based on partial results of 1993
[2]Total exports
[3]Value of production
[4]Total imports
Source: FESYP, *1993 Annual Report*, 1994

Table 9
United States furniture imports, 1992 and 1993 (in $ millions)

	1992	1993	% change
Taiwan	830	848	2
Canada	361	469	30
Italy	307	299	-3
Mexico	212	233	10
China	144	225	46
Malaysia	69	230	87
Thailand	82	125	53
Indonesia	62	97	55
Philipines	69	80	17
W. Germany	75	72	-13
World	2673	3025	13

Source: FESYP, *1993 Annual Report*, 1994

Chapter III

RECYCLING WOOD FIBRE AND ITS EFFECTS ON THE FOREST AND FOREST INDUSTRIES SECTOR

Recycling of wood fibre is not new, as industries have reused wood and paper products as furnish, ie the raw material, for the production on new wood and paper products or the production of energy since its gathering and usage became economically feasible. However in the last 20 years, since the oil crisis in the mid-1970s, and especially in the last few years, the recycling of wood fibre has increased dramatically around the world. And in the last years in countries where waste management legislation was enacted that impacted market forces in their forest and forest industries sector (as well as those of their trading partners), the effect has contributed to a change in the demand for virgin fibre from forests and concern for ramifications on forest land management. The purpose of this chapter is to examine the recycling situation in the ECE region and to present examples of relevant legislation, to provide an indication the magnitude of the consequences for the forest and forest industries sector.

A. SITUATION ANALYSIS

Sources of secondary or recycled fibre include recovered paper, paperboard or cardboard, wood from building demolition and packaging and materials handling waste. Due to successful government- and market-induced recycling programs, the supply of some of these materials increased dramatically. The pulp and paper industry could not improve capacity sufficiently fast to follow the increase in supply and thus the demand lagged behind; at this point waste paper had a negative price, ie the producer paid to have it removed. There has been a cyclical overcapacity of pulp worldwide and until recently prices had fallen. With a cost lower than virgin fibre from forests, industries consumed increasing amounts of secondary fibre and the demand and price for small diameter roundwood decreased. In some cases the value of small diameter trees dropped below harvesting costs. Thus, the increased recycling contributed to the downward pressure on prices for pulpwood. This was but one reason that forest landowners in Europe have reduced timber stand improvement thinnings and harvests of small diameter trees. Contributing to a substantial increase of the standing volume of European forests, this situation could affect the future availability, quality and quantity of roundwood.

At first observation, an elevated stocking of forests might seem beneficial, however, according to forest managers, a well-managed forest can actually produce a larger volume of higher value wood and non-wood goods and services than an unmanaged forest. They say, an unmanaged, and in this case unthinned forest, runs several risks: a loss of potential intermediate revenues from the sale of thinnings; a decrease of immediate value of stands if they become stagnated with small-sized and low-quality trees and perhaps undesirable species; a reduced forest health and vigour and therefore susceptibility to fire, insects and diseases; and of great importance, a drop in value of future harvests if potential growth is not achieved.

The products from thinnings normally include small diameter roundwood but can also include chips and forest residues. These are traditional inputs for paper and paperboard, panel products and energy production. Many of the products within these production categories can either be produced from roundwood or from recovered fibre. It is this substitution ability for the raw material source which enables recovered fibre to offset the demand for virgin fibre. Other products using residues, like particleboard, prefer residues from sawmills, veneer mills and plywood mills, before that of primary fibre from roundwood or forest residues and thus, the furnish is only partially substitutable.

Conversely other products use recycled wood fibre when it is technically feasible and more economical than virgin fibre. Yet some virgin fibre must continually be injected into the production stream as dictated by the products' quality requirements. For example, newsprint can be made from up to 90% recycled fibre, depending on the quality of that fibre, while higher grades of paper may contain only a few percent of recycled fibre, and then only if it is high-quality recycled fibre. Wood fibres are currently recycled only 2 to 3 times depending on their species, intended end-use and the recycling and production processes. However legislation could distort the "pure economics" of the scenario. Successful "green marketing," ie capitalizing on present consumer preference for recycling and the growing market for new products of secondary fibre, has reduced demand for primary pulp, especially in printing and writing grades of paper.

B. LEGISLATION

It is beyond the scope of this section to cover fully the increasing amount of legislation that national, regional and municipal governments have written to first,

attempt to reduce the amount of waste by limiting its creation and secondly, to mandate the processing of waste. Germany's and Austria's Ordinances on the Avoidance of Packaging Waste, the Dutch Covenant, the Belgian Ecotax, the French Eco-Emballage and the British Environmental Protection Act are some examples of legislation which contain regulations to limit the growth of packaging and set volume and deadlines for recovery and recycling of packaging waste. The European Commission of the European Union (EU) has drafted a directive on packaging and packaging waste with the intention of harmonizing legislation throughout the EU in 1995. Table 10 indicates recovery and recycling targets for some EU countries and the EU.

Table 10
Recovery and recycling targets for (fibre-based) packaging waste

Country	Recovery	Utilization	Target Year
Austria	80%	80%	2000
Belgium- Flanders	100%	46%	2000
Belgium - Wallonia	-	60%	2000
Denmark	-	80%	1998
France	75%	-	2000
Germany	80%	80%	1995
The Netherlands	100%	60%	2000
United Kingdom	-	50%	2000
EU	90%	60%	2005

Source: Stolp, J. "Environmental legislation: a threat to the forest and forest industries?", Discussion paper presented to the UN-ECE Timber Committee's Team of Specialists on New Products, Recycling, Markets and Applications for Forest Products meeting, March, 1994.

The individual countries legislation has in some cases had ramifications outside the countries borders. For example, Germany's ordinance with targets of 80% recovery of packaging waste and 80% utilization of that packaging waste by 1995 resulted in the collection of mountains of waste before the establishment of the infrastructure to process that waste. In 1992 surplus waste paper recovered in Germany, ie the amount of recovered waste paper above the utilization capacity within Germany, reached 1.1 million tons and was forecast to grow to 2.0 million tons in 1993. The shortfall in utilization capacity, combined with the oversupply of waste, led to the export of large volumes of these wastes, some of which was landfilled or incinerated in other countries. Under the German regulations, landfilling and incineration of the wast even for the production of energy, are not acceptab means of waste treatment. In *North America* recyclin has been driven more by market conditions ar availability of technology than by legislation. Yet, the United States, there has been federal, state and loc government legislation to reduce the landfilling municipal solid waste, of which 37% was paper ar paperboard in 1990 (about the same percentage Europe). With declining landfill space and hen increased disposal fees (up 210 to 386% depending the region of the United States from 1982 to 1990 measured in constant 1986 dollars), the result has bee expansion of paper collection and sorting throug community-based collection programmes. Wi abundant supplies coupled with improved capabiliti for processing of recovered paper and paperboard, th result has been faster growth in recycling ar incineration than for landfilling. In the United State landfilling remains the primary disposal mechanism f municipal solid waste, despite the reduction of landfil due to environmental concerns from 20,000 sites 1978 to about 6000 in 1990. For the first time in 199 more waste paper was collected than was landfilled.

Still some states and the federal government enacte legislation to stimulate demand for recycled wood fibr by mandating minimum recycled content laws f newsprint (typically about 40%) and governmer printing and writing paper (20 to 50% depending grade). However many publishers and users newsprint, printing and writing papers had already use paper with some percentage of recycled fibre. addition to recycled fibre content laws, some feder and state programmes were established to develo markets for recycled paper and paperboard or promote economic development, ie starting companie based on technologies which use recycled materials. 1994, 28 states offered tax credits or incentives f recycling technologies and 16 states had mark development councils to promote recycling. The Unite States structural export surplus for waste pap diminished.

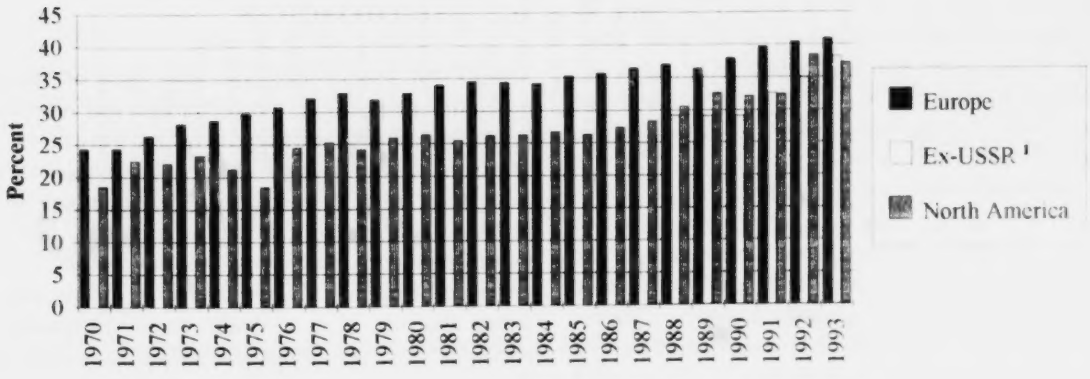
C. QUANTIFYING THE EFFECTS

Table 11 shows the trend in the percentage of *wast paper recovered* since 1970 by region and in som selected countries within the ECE region. Waste pape recovery is based upon the *apparent consumption* o total paper and paperboard, thus: % recovery of wast paper = production (recovery) of waste paper / apparen consumption of paper and paperboard x 100.

Table 11
Recovery rates of waste paper, 1970 to 1993
(in percent)

Region/Country	1970	1975	1980	1985	1990	1993
Europe	24.3	29.7	32.7	35.3	37.9	40.8
Austria	27.7	35.0	27.6	32.3	51.8	49.0
Belgium/Luxembourg	30.3	33.3	28.6	36.2	33.6	35.7
Bulgaria	...	20.4	15.4	14.5	20.3	28.2
Finland	24.0	18.1	22.1	26.8	29.6	28.4
France	27.5	32.7	31.0	37.8	34.8	35.5
Germany	25.9	27.6	35.2	41.3	44.9	52.5
Hungary	...	30.2	34.3	42.4	40.3	48.7
Italy	20.0	32.0	29.3	25.0	26.4	40.0
Netherlands	39.6	42.6	44.9	43.9	50.6	54.3
Romania	...	31.8	26.4	28.7	22.5	35.3
Spain	27.5	36.4	35.8	42.6	39.0	37.3
Sweden	22.7	26.4	33.1	39.6	43.7	44.1
Switzerland	31.3	47.1	36.3	44.8	47.3	51.4
United Kingdom	28.7	29.0	33.8	28.7	33.2	31.2
North America	18.5	18.4	26.4	26.3	32.0	37.2
Canada	18.8	18.3	20.9	21.4	30.7	36.2
United States	18.5	18.4	26.7	26.7	32.1	37.2
Ex-USSR	...	...	...	...	29.1	38.1
Japan	39.0	46.2	44.9	50.1	50.1	52.1

Graph 4
Recovery rates of waste paper, 1970 to 1993



[1] Data unavailable for ex-USSR before 1988.

Table 11 and graph 4 illustrate that recovery rates generally in the ECE region moved upwards in the 1970s and then remained steady through the 1980s before climbing in the late 1980s and 1990s. European recovery of waste paper increased in the 1970s, was more stagnant in the 1980s and has been increasing in the 1990s, at least part of the increase is due to mandated recycling programmes. In North America strong growth in 1992 and 1993 were attributed to expanding municipal collection programmes and a corresponding large increase in the apparent consumption of waste. Data were unavailable for the ex-USSR until 1988, and even since then the data are estimated for the entire CIS. The increases from 1991 through 1993 are due to a 70% decline in the apparent consumption of paper and paperboard during the same period as the countries go through the transition process.

Table 12 shows the percentage of utilization of waste paper for the same countries. Waste paper utilization is based upon the *production* of total paper and paperboard, thus: % utilization of waste paper = apparent consumption of waste paper / production of paper and paperboard x 100.

Table 12 and graph 5 of utilization rates exhibit similar trends as the former graph for Europe. The increase in Europe from 1990 through 1992 may be the reaction of low waste paper prices which encouraged its substitution for roundwood; in the latter half of 1993 and early 1994, technological improvements, including more production capacity, permitted increased utilization of recycled paper, the demand increased and the price rose driving some manufacturers back towards primary fibre. North American utilization rates rose in the early 1970s and remained steady through 1991--with the exception of a dip in 1974 and 1975 when the United States went through a recession and waste paper apparent consumption and the production of paper and paper products both fell. In 1975 the same occurred in Canada which compounded the North American decrease. The increase in North America in 1992 was due to increased waste paper apparent production as increases in supply were matched by increased processing capacity. Although not clearly seen in the graph, the United States was displaced from some export markets in 1993 by German exports. The ex-USSR 53% drop in paper and paperboard production in 1992 and 1993 (from 9.6 million m.t. in 1991 to 5.8 million m.t. in 1992 and to 4.5 million m.t. in 1993) was behind the fall in their utilization rate.

Based on a report prepared for the Team of Specialists on New Products, Recycling, Markets and Applicat for Forest Products, a 1% rise in the percentag waste paper in the raw material mix of the paper board industries would lead to a drop of 2.7 million 1.7% of total equivalent of pulpwood consump (based on 1992 data including the raw materials mix of the paper industry for only those countries li below).

Table 13
Reduction of pulpwood requirements in some countries resulting from 1% increase of secondary fibres in furnish
(1000 m^3 of roundwood equivalent under b

Country	Drop in pulpwood demand
Austria	153
Finland	376
Norway	55
Sweden	371
Switzerland	61
Belgium\Luxembourg	50
Denmark	18
France	379
Germany	568
Italy	294
The Netherlands	133
Portugal	53
Spain	181
Total of above countries	2,692

Source: Stolp, J. "Environmental legislation: a threat to the f and forest industries?", Discussion paper presented to the UN-Timber Committee's Team of Specialists on New Prod Recycling, Markets and Applications for Forest Products mee March 1994.

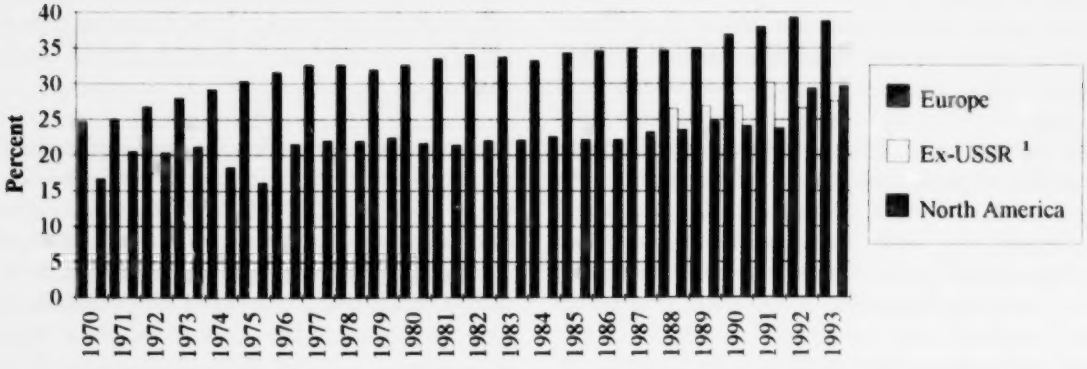
D. CONSEQUENCES

The United States report from the Team of Specia on New Products, Recycling, Markets and Applicati for Forest Products stated that the growth in pa recycling to "save" trees could have the opposite ef of making trees less valuable for their use in p making, and instead turn these resources into lo valued products. Remarking that the demand for w and wood fibre has always tended to follow supply states that on a worldwide basis, increased f recycling will favour greater overall consumption forest products. In the United States, despite ris demand for pulp and paper, roundwood pulpw oversupply is projected to increase due to increa paper recycling. Consequently pulpwood prices expected to remain stable or to decline.

Table 12
Utilization rates of waste paper, 1970 to 1993
(in percent)

Region/Country	1970	1975	1980	1985	1990	1993
Europe	24.7	30.3	32.6	34.2	36.8	38.8
Austria	25.6	28.2	33.5	38.3	39.0	33.6
Belgium/Luxembourg	22.9	20.9	21.5	26.7	22.7	26.8
Bulgaria	...	25.2	20.2	17.7	24.9	31.0
Finland	4.3	4.0	3.6	3.9	4 9	5.5
France	33.2	36.0	36.7	43.7	46.7	47.3
Germany	36.9	37.4	43.6	44.3	50.2	55.3
Hungary	...	36.1	41.6	60.9	55.3	83.9
Italy	28.5	41.5	44.9	43.8	46.0	62.6
Netherlands	36.1	51.6	52.2	61.3	64.9	70.3
Romania	...	30.4	22.3	25.4	22.1	33.7
Spain	33.8	44.6	46.2	57.3	64.1	67.9
Sweden	6.4	9.5	11.4	11.6	12.3	15.1
Switzerland	28.6	37.5	35.0	44.3	46.2	52.6
United Kingdom	40.6	47.1	56.1	57.0	59.0	57.5
North America	16.7	16.1	21.6	22.2	24.1	29.3
Canada	5.5	6.7	9.4	9.4	11.4	14.6
United States	19.4	18.1	24.4	25.2	26.9	33.0
Ex-USSR	...	...	...	...	26.9	27.5
Japan	38.6	44.9	45.8	51.0	52.1	54.8

Graph 5
Utilization of waste paper, 1970 to 1993



[1] Data unavailable for ex-USSR before 1988.

Other consequences of the increased fibre recycling are on the economic structure of the forest and forest products sector. As recycled fibre became less expensive than virgin fibre a shift occurred by those industries capable of capitalizing on the situation. A downward spiral resulted in waste paper prices since 1992 as the oversupply could not be rectified by simply reducing the price and thus raising the demand (Graph 6); the supply had become inelastic in face of the mandated collection of waste paper by the local communities. Due to planning and building time needed for the installation of new capacity or upgrading the existing capacity to use waste paper as a raw material, the demand for waste paper lagged behind the sudden, not market driven, increase in supply of waste paper. While waste paper is not completely equivalent to pulpwood, the oversupply of recovered paper and pulp, and the low or even negative prices of waste paper contributed to a drop of the pulpwood prices. As the new capacity was coming on steam in the second half of 1993, the balance between supply and demand of waste paper was gradually restored. Consequently in late 1993 and early 1994, waste paper prices began to rise.

Pulpwood used in the manufacture of pulp and panel products can be either roundwood or wood residues and chips. It is the production of sawnwood and veneer which dictates the level of supply of wood residues (a preferred source of raw material for particleboard manufacturing) and thus the supply of industrial wood residues is relatively inelastic as is the supply of waste paper. Roundwood pulpwood is the only part of the equation which remains supply elastic. Faced with this condition, forest owners have withheld supply in order to achieve higher prices. The fall in roundwood pulpwood prices has had negative effects on prices of other roundwood assortments due to the link between all roundwood prices.

Another consequence of the increased use of recycled fibre has been the siting of pulpmills closer to the source of recycled fibre, ie near the "urban forests." Lower investment costs are required in plants and equipment to produce secondary pulp from waste paper than for primary fibre pulp. Consequently in highly forested countries with relatively low populations to produce waste paper, like Canada and the Scandinavian countries, the result has been a comparable disadvantage for producing products requiring secondary fibre; these historically producers of primary fibre have doubled imports of recovered paper between 1990 and 1993 to meet market demands for products containing recycled fibre (imports of waste paper in 1990 and 1993 in Canada were up 50.6% to 1.1. million m.t.; in Finland were up 51.8% to 0.1 million m.t.; and in Sweden were up 49.3% to 0.5 million m.t.).

In comparison with the above-described effects of the utilization of recycled wood fibre, another consequence is the production of unusable by-products during the recovery process. Common contaminants in the recycled paper and paperboard are plastics, metals, organic matter and inorganic matter like dirt. The deinking process produces a combustible sludge when dried, but the resultant ash must be treated as a chemical waste as it contains heavy metals from the inks and is generally landfilled although it has been tried as an additive to concrete in order to lock it in a usable product. The water used in the pulping process for recycled fibre must be cleaned and recycled or discharged; in the future, more totally closed systems will reuse process water.

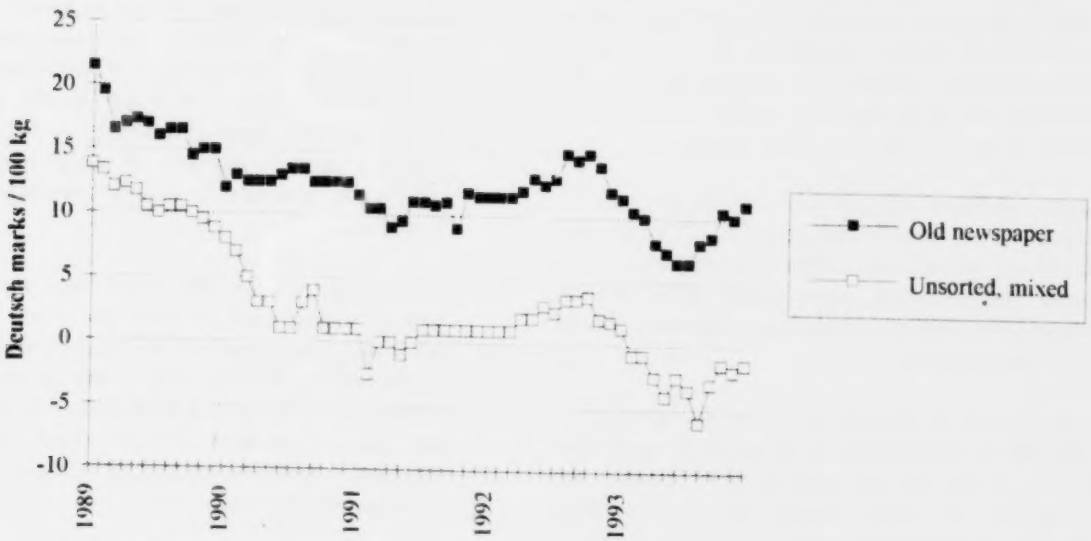
E. SOLUTIONS

While it is assumed that the industry will adjust capacity to utilize the increasing quantities of waste paper collected and that demand for paper and paperboard will continue to grow with population increases, alternative uses of both recovered wood fibre and roundwood could be needed to maintain profitability and productivity in the forest and forest products sector.

Specific products requiring small-diameter roundwood could preserve the demand for pulpwood-sized removals. OSB is an example of a product, which because of its particular requirement for structural flakes from roundwood, may be immune from the effects of elevated availability of recycled fibre supply--although it could benefit from depressed raw material costs.

A potentially large market for recovered wood fibre, of all grades and sizes, is for production of energy. Since the oil crisis of the 1970s, the forest products industries have increased their energy self-sufficiency through combustion of their by-products to produce process heat and to co-generate electricity. For example, chemical pulp factories have been able to be totally energy self-sufficient by burning their black liquor by-product. Many municipalities produce energy through the combustion of household and commercial wastes, of which a high percentage is waste paper and wood. Burning wood has the advantage of being a carbon dioxide (CO_2) neutral energy because only the carbon that the tree has sequestered during its lifetime is

Graph 6
Recycled paper prices (delivered at mill), 1989 to 1993



Source: *Informationsbrief-Holz-Zellstoff-Papier*

released during burning. On the contrary, CO_2 is automatically produced during combustion of fossil fuels and is an important greenhouse gas. Since many countries have initiated programmes to reduce the production of greenhouse gasses, the use of waste paper as a fuel could contribute to this objective and have the additional advantage of reducing landfilled municipal wastes and deriving cost savings from employment of a economical, renewable energy source. Development of wood as an energy source, and therefore the potential benefit of increasing or at least maintaining some markets for small diameter roundwood and forest residues, depends on the economics of wood fibre combustion which themselves are sometimes assisted by government tax or other incentives.

Alternative uses of recycling wood fibre were considered by the Team of Specialists on New Products, Recycling, Markets and Applications for Forest Products. The team made suggestions for policy and for new markets to use the oversupply of material resulting from current legislated recycling. Alternative markets for recycled wood fibre, in addition to traditional uses for pulp and paper products and wood-based panels, included energy production, composting for a soil amendment or mulching material, cellulose insulation, moulded products, animal bedding, packaging cushioning material, composite wood fibre and plaster wallboard panels and composite plastic and wood fibre products.

F. CONCLUSIONS

The effects on the forest and forest industries sector are real and have caused structural changes towards the use of recovered wood fibre, while offsetting the demand for virgin fibre. The decreased demand for low-grade and small-sized roundwood has weakened their markets and could have negative consequences on the future forests in the ECE region. Increased production of energy from recycled paper and wood could present alternative markets, simultaneously relieve the downward pressures on the roundwood markets and contribute to the reduction of the greenhouse effect. Concurrently alternative markets for roundwood which competes with recovered fibre are required.

From the above analysis it becomes evident that the recycling of wood fibre is a many faceted issue which needs careful examination when making policy; a global approach is necessary which considers all factors and consequences and incorporates more than the reduction of waste and its utilization.

G. STATEMENT BY THE TIMBER COMMITTEE AND THE EUROPEAN FORESTRY COMMISSION

In line with the resolutions of the Helsinki Ministerial Conference, the FAO European Forestry Commission and the UN-ECE Timber Committee meeting in joint session in Rome in October 1993 emphasized the vital importance of forests in supplying ecological, economic and social benefits to society. They stated:

The forests' ability to provide these benefits can only be maintained by sustainable management. The fact that wood, under sustainable forest management, is a renewable raw material, with many environmental advantages compared to competing materials, should also be borne in mind.

The main source of revenue for forest management is often the sale of wood to the forest industries and other consumers. At present, in many parts of Europe, the forests' ability to supply social and environmental benefits on a continuing and sustainable basis is impaired by the fact that some silvicultural operations, notably thinning, have become economically unviable because of weak demand especially for small-sized wood. In addition, it should be borne in mind that in some areas the provision of multiple use benefits already puts an excessive burden on the forest owners. As a result, there is in many countries a serious risk of a reduction in the forests' stability, vitality, productivity and its contribution to the rural economy and society especially in those areas where forests and forest industries are a major source of income and employment.

One contribution to the weakening demand for small-sized wood has been the sharp increase in the recycling of used paper. Recycling has the effect desirable in itself of reducing the pressure of waste disposal, but it is also resulting in a reduction in the demand for wood for paper making and, in particular, for small-sized pulpwood. In the light of these developments the joint session considers that:

1. *New outlets for small-sized wood should be developed and existing outlets expanded. One possibility which should be actively pursued is the use of wood, especially small-sized wood, as a source of energy. Another is the use of low-grade waste paper as an energy source. Both should be actively pursued. Wood is renewable and has the potential to reduce consumption of fossil fuels.*

2. *Policy makers, for the forest and for other sectors, should bear in mind the needs of the forest and forest products sector as a whole and in particular the fact that viable wood-using industries are one necessary condition for a forest and forests products sector which is truly sustainable, from the ecological, economical and social points of view.*

These measures would encourage the proper management of forests and thus strengthen their ability to provide all the multiple benefits which society expects of them.

Chapter IV

TRENDS IN THE SUPPLY, TRADE AND CONSUMPTION OF FOREST PRODUCTS

A. ROUNDWOOD

(i) Roundwood supply

European removals of roundwood are estimated to have fallen in 1993 by 1.1% over 1992 (see Table 14). Removals fell 0.8% for coniferous roundwood and 1.8% for non-coniferous roundwood. Since data were received this year for 1992 and 1993, it may be noted that the decrease in coniferous roundwood from 1991 to 1992 was also 0.8% which is substantially less than the 9.6% drop from 1990 to 1991 reported last year. This indicates that the large volumes of trees felled by the 1990 storms have been consumed and that harvesting conditions are returning to a more normal level.

The roundwood breakdown indicates a decrease of pulpwood production in 1993, in part due to accelerating recycling of paper and its utilization as pulp furnish; however a 3.1% increase in pulpwood production was registered in Europe in 1992 over 1991. Sawlog production, which had fallen 11.6% in 1991 from 1990, fell again in 1992 by 3.8%, but stayed at approximately this level in 1993. Fuelwood production has remained nearly constant over the past five years. European roundwood production was forecast to increase in 1994 by the Timber Committee at its October 1993 session: by 7.1% for coniferous logs, by 2.5% for non-coniferous logs, by 3.6% for pulpwood, by 4.8% for wood in the rough, and by 0.5% for fuelwood.

Comparable data for roundwood removals were unavailable for North America and the former USSR from either the Timber Bulletin Questionnaires or the Timber Committee's fifty-first session forecasts. The North American timber harvest is expected to decline again in 1994. In the Pacific Northwest the level of harvest will be 75% below historic levels. The United States South has increased production, but has not been able to fully offset production lost in other regions. Environmental controversies are increasing in Canada too and British Colombia output will probably hold close to the 1993 level of 25.5 million m^3. The British Colombia provincial government is in the process of recalculation of the annual allowable cut.

The reduced European imports of sawnwood from Canada and Russia enabled European log producers to raise removals although sawnwood consumption fell. Increased net imports of pulpwood and the recycling of waste paper exacerbated the downward trend in pulpwood removals.

Readers familiar with past *Annual Forest Product Market Reviews* will note a change in the treatment of roundwood in this year's *Review*. Due to a change in the Customs Cooperation Council's Harmonized System (HS), the current nomenclature combines all roundwood (sawlogs, veneer logs, pulpwood, and other) into one class, "industrial wood in the rough," and no breakdown of trade by assortment is possible.

With decreasing domestic and tropical log supplies available to traditional log processing countries like the United States and Japan, some countries like New Zealand have partially filled the demand. Softwood log exports from New Zealand have exploded in recent years as plantations matured, the domestic consumption remained stable or decreased, and export prices were higher than those paid by domestic sawmills. From 1992 to mid-1993 New Zealand export log prices rose 95 to 200% depending upon grade. With high New Zealand radiata prices, importers sought other sources such as United States southern yellow pine and Chilean radiata pine.

Domestic New Zealand sawmillers were squeezed by lack of supply and increasing prices and requested log export restrictions. Approximately 30% of New Zealand softwood is exported in log form to the following countries in order of purchase:

New Zealand Coniferous Log Exports

Country	January-June 1993 m^3	January-June 1992 m^3	% Change
Korea	1,186,995	756,777	52
Japan	1,021,517	909,006	12
China	238,936	159,216	50
Taiwan	47,835	25,405	88
Others	33,305	16,763	99
Total	2,523,588	1,876,160	35

Source: New Zealand Department of Statistics

Table 14

Roundwood removals in Europe, 1991 to 1993

Product	1991	1992	1993	Change 1992 to 1993	
				Volume	Percent
	(million m3)				(%)
Coniferous	226.8	224.9	223.1	-1.8	-0.8
Broadleaved	117.6	115.9	113.8	-2.1	-1.8
Total	344.4	340.8	336.9	-3.9	-1.1
of which :					
Fuelwood	58.5	59.9	59.8	-0.1	-0.2
Industrial wood	285.9	280.9	277.1	-3.8	-1.4
- Sawlogs	154.2	148.4	149.5	1.1	0.7
- Pulpwood	111.9	115.4	109.6	-5.8	-5.0
- Other	19.8	17.1	18.0	0.9	5.3

Table 15

Removals of coniferous logs in selected European countries, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993	
					Volume	Percent
REMOVALS	(1000 m3)					(%)
EUROPE :	138408	120299	116929	118573	1644	1.4
of which :						
Sweden a/	24308	22100	24300	25000	700	2.9
Finland	17306	13470	15241	16232	991	6.5
Germany, Fed. Rep. of	17527	14170	13565	14753	1188	8.8
France	14385	13127	12400	11100	-1300	-10.5
Poland	7338	6514	7519	7424	-95	-1.3
Austria	10279	9469	6265	6363	98	1.6
former Czechoslovakia	7412	5987	5377	5044	-333	-6.2
Norway	5297	5680	4412	...	...	...
Spain	5035	4784	3545	...	...	...
Portugal	4700	3730	3294	...	...	...
United Kingdom	3125	3087	3135	3247	112	3.6
Turkey	3082	2654	2752	...	...	...
Switzerland	4031	2634	2520	...	...	...
Other countries	14583	12893	12604	12887	283	2.2

a/ Felling year.

(ii) Roundwood supply, European developments

Table 15 indicates an increase by 1.4%, or 1.6 million m^3 in 1993 production of coniferous sawlogs in selected European countries over 1992. Corresponding to their increased production of sawnwood, Sweden and Finland increased log harvests. Germany, depleting the stores of storm-felled timber, increased log production in 1993 to levels higher than the previous 2 years.

While most countries reported increases, French log production fell significantly, by 10.5%, to its lowest level in 3 years, due to a decrease in both domestic and export markets for sawnwood. In the first quarter of 1994, oak and beech log supplies were low and the price had increased 20% over the first quarter of 1993.

In response to shortages as forest owners initially waited for improved market conditions and finally negotiated higher prices with the sawmills, Finnish log prices increased in 1994 by 15 to 30% depending upon the grade and the period of comparison. Swedish log prices increased 20% over the last year as higher log prices were negotiated.

European log markets improved in early 1994 as log prices and trade increased in Germany, Belgium, Finland, Sweden, and Austria. For example, after midyear 1993, German log prices began to recover but were still well below their historical level in 1991. These price rises, which have doubled for some log grades, indicated that the effects of the storm-felled timber and its relative low value, still affected the markets in 1993 and early 1994. The graph of Germany's producer price indices from public forests shows the recent trends for both coniferous and non-coniferous logs (graph 7).

By summer of 1994, Germany's roundwood prices are said to have stabilized at a level 35 to 40% higher than in early 1993. German roundwood prices suffered during the clean-up of the storm-felled trees and despite measures to store logs in the forests and under water in order to keep log prices at their former 130 to 200 deutsche mark (DEM) level, the price of these logs eventually fell to 100 DEM. Faced with 30 million m^3 of medium-sized logs under water storage at the beginning of 1994 and deterioration of quality which dropped yields from 65 to 55%, state forests have sold logs for as little as 1 DEM per m^3. Obviously Germany and other countries in the European market will be glad to have this catastrophic chapter behind and to pursue a more regular forest management.

(iii) Roundwood supply, North American developments

In 1993, North American supply of roundwood continued to be constricted on federal, state and provincial lands but improved somewhat on private lands as forest landowners sold logs in anticipation of restrictions on their harvests. Prices rose as a consequence of the simple economic principle of increased demand plus reduced supply. Decreased supplies in one region were no longer capable of being covered by another region and log imports increased.

At one time the southern pine forests were seen as the future supply source for the United States as they are not as affected by federal land management restrictions since the ownership is over 60% non-industrial private forest landowners and nearly 30% forest products industry. However like the PNW, the South's forests have come under pressure from environmental and wildlife preservation legislation. As a result of constrictions on federal lands, the southeastern United States harvest was forecast by *Random Lengths Export* to fall by 5% by 2000 and coniferous wood fibre prices to rise by 3% annually to the year 2000. This scenario could result in a repositioning of the southern pine forests in the global marketplace.

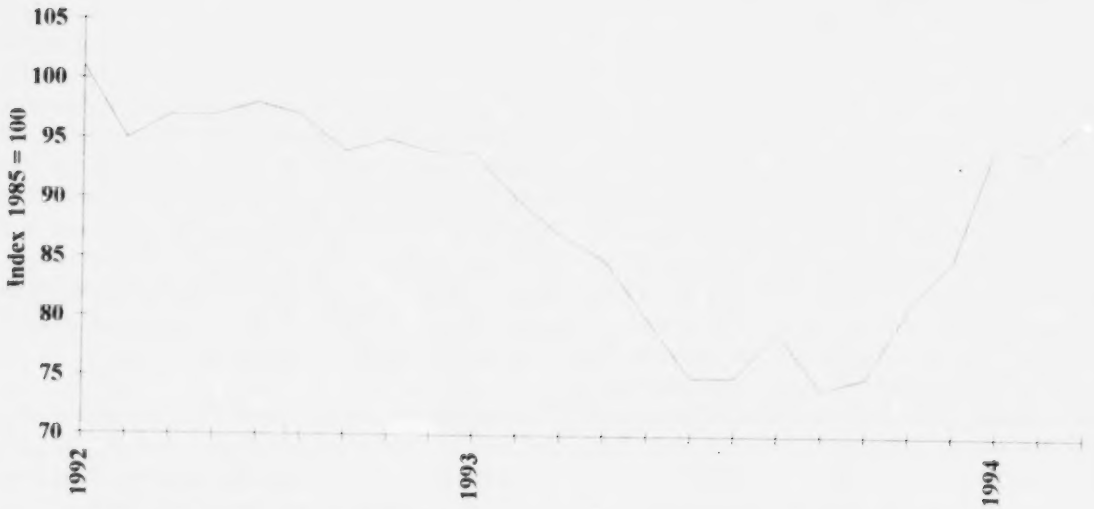
In line with sawnwood, United States non-coniferous log prices have escalated since 1991 and reached record highs in the first quarter of 1994 (graph 8).

As timber removals from federal lands in the Pacific Northwest continue to decrease, volumes of New Zealand softwood logs imported to the United States have increased since the latter part of 1993. Sawmills imported logs, mainly radiata pine, in an effort to stretch their own timber holdings and ponderosa pine log stocks. The volumes remain small compared with imports of radiata mouldings, but producers say it gives them one more option as domestic timber supplies tighten. In January 1994 the United States imported 26,147 m^3 of New Zealand coniferous logs. For comparison, 28,862 m^3 of New Zealand logs were imported in all of 1993, about 7% of total log imports. The majority of 1993's volume was shipped in the last quarter following an interim ruling by the United States Animal and Plant Health Inspection Service (APHIS) that set guidelines for log imports.

Continued New Zealand imports depend on price. In early 1994, pruned Oregon logs cost $1300 per MBF and the delivered price for radiata logs was $1000 to $1100 per MBF. Sawmillers are finding the quality

Graph 7

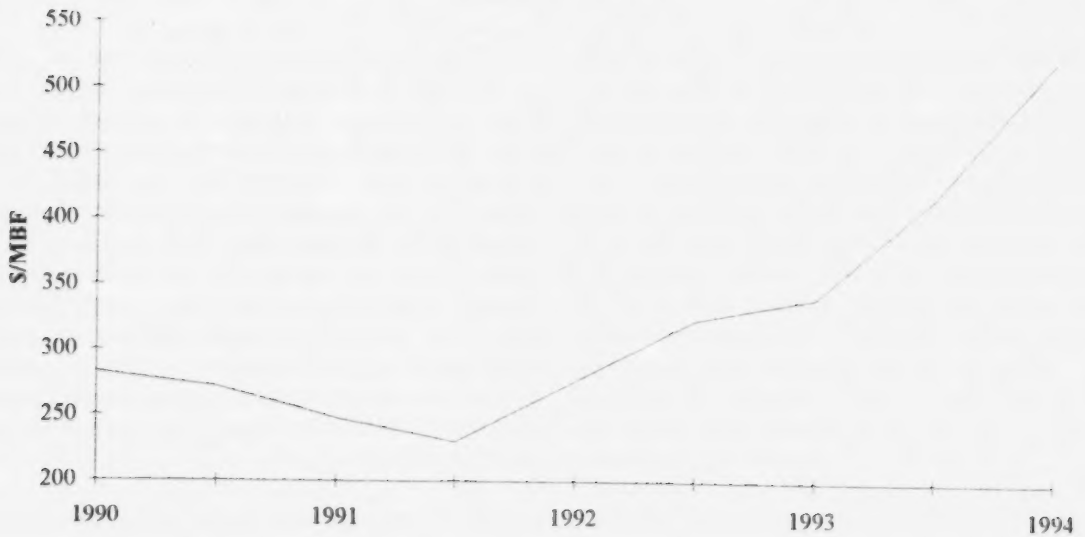
Spruce log producer price indices for public forests in Germany, 1992 to 1994



Source: Preise und Preisindizes für die Land- und Forstwirtschaft, Statistisches, Bundesamt, June 1994.

Graph 8

United States non-coniferous log prices, 1990 to 1994 [1]



[1] Prices paid for red oak, grade 1 logs delivered at sawmill in Doyle log scale.

Source: Ohio Division of Forestry, Ohio Timber Prices, 1994.

acceptable and the products are sold at Ponderosa pine prices for common grade lumber, and 10% less for moulding and semi-processed items.

British Columbia producer stumpage fees were increased an average of 70% according to the *Timber Trade Journal*, of 18 June 1994. The article stated that there is a general consensus among Canadian shippers that the recent increase will hurt the province's global competitiveness. The stumpage increase was designed by the British Columbia government to capture some of the increase in lumber prices since 1992. Stumpage, the price paid to the government for timber cut on provincially-owned forest land, will continue to be adjusted with the movement in lumber markets. While the increase may hurt British Columbia's immediate competitiveness, the new forest renewal program is hoped to improve the province's environmental image, especially in Europe where environmentalists have tried to discredit the British Columbia forest industry. The stumpage increases will raise about C$ 2 billion over the next 5 years with much of the revenue expected to finance improve reforestation and silviculture.

(iv) Trade in industrial wood in the rough

The reader is cautioned that Table 16's statistics are not comparable to former *Review* tables of trade of coniferous logs since the Customs Cooperation Council's Harmonized System classification now contains sawlogs, pulpwood, and other industrial wood. Pulpwood will be described in more detail in section "E".

Exports by Europe declined 17.6% in 1993 over 1992 to 16.0 million m^3 with non-coniferous representing about half the coniferous volume. The largest export decreases in 1993 over 1992 came from Germany, down 27.5% to 4.4 million m^3, France, down 46.9% to 1.7 million m^3, Poland, down 28.8% to under 1 million m^3. The explanations for these three countries 1993 roundwood export decreases varies somewhat: Germany had significantly reduced its stocks of windthrown timber from the 1990 storms and with domestic sawnwood production increasing, less logs were leftover for export; Poland improved value-added processing and exported sawnwood in place of roundwood. France's wood processing industries continued to be depressed and log production, processing and export continued to fall due to weakness in domestic demand and severe competition in export markets, especially for non-coniferous timber.

In 1993 export increases came in countries which had relatively small export volumes so the percentage increases look large, eg Finland's 1993 log exports were up 100.4% over small 1992 volume of less than 0.5 million m^3. Some low quality Finnish industrial wood in the rough, which was only one-fourth the cost of standard pulpwood, went to Sweden which has the capabilities of pulping low-grade and small-sized pulpwood. In 1994 the Federation of Finnish Forest Industries announced a strong increase in the price of roundwood due to culmination of negotiations with forest owners who had previously withheld roundwood until prices improved. Log supplies should improve now that a 25% increase in pine logs and a 29% increase in spruce logs from the low point in the summer of 1993 was achieved during the last year, ie until summer of 1994. Some Swedish log prices also increased, by 20%, during the last year.

Finland also sent logs to Japan. Finnish exports of logs to Japan in 1993 were 106,880 m^3 and they are poised to increase in 1994 after first quarter shipments of 35,145 m^3. Japanese importers, citing Austria's lack of environmental restrictions on log exports, have contracted to import 29,000 m^3 of sawlogs and 5000 m^3 of sawnwood in 1994.

One bright spot in all the ex-USSR statistics is the increase in exports of industrial wood in the rough in 1993 over 1992 by 11.8%. Some of this is attributable to Russian exports to Japan, but the rest of the increase is the result of Latvian exports of pulpwood to Sweden and Finland and Estonian increases in exports to Finland.

North American exports of industrial wood in the rough in 1993 fell 9.2% over 1992 levels. In the United States this was in response to increased domestic roundwood needs as traditional sources in the PNW for roundwood were withdrawn from the market. United States 1994 sawlog exports to all destinations continued falling, in the first quarter by 23%, to 1.3 million m^3 Scribner scale in response to the strained domestic demand. Canadian log exports from British Columbia were down 8% for all log grades and to all destinations combined during the first quarter of 1994 as compared to the same quarter in 1993; however this decrease masks an increase in log shipments to the United States, by 85% to 83,000 m^3.

Imports of industrial wood in the rough fell by 6.3% in 1993 over 1992 in Europe due partially to the decrease in intra-regional trade (hopefully this figure was not a case of under-reporting). Volumes were 31.3 million m^3 which was roughly equally divided between

Table 16
Exports and imports of industrial wood in the rough, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
			(1000 m3)			(%)
EXPORTS						
EUROPE :						
- Coniferous	10917	15540	12515	10469	-2046	-16.3
- Broadleaved	7966	7636	6973	5581	-1392	-20.0
TOTAL :	18883	23176	19488	16050	-3438	-17.6
of which :						
Germany, Fed. Rep. of	4522	8262	6035	4373	-1662	-27.5
France	5000	4775	3146	1669	-1477	-46.9
Belgium-Lux	1045	1509	1252	...	...	...
Switzerland	1124	1166	1107	1055	-52	-4.7
Hungary	962	896	988	...	...	...
Poland	408	892	1356	966	-390	-28.8
Finland	294	199	480	962	482	100.4
Sweden	796	807	640	833	193	30.2
Norway	625	707	724	681	-43	-5.9
former Yugoslavia	701	0	786	644	-142	-18.1
Portugal	373	452	638	...	...	...
Austria	1190	816	486	551	65	13.4
Other countries	1843	2695	1850	1438	-412	-22.3
former USSR	10708	10624	11400	12748	1348	11.8
Canada	1197	1356	2103	2017	-86	-4.1
United States	21666	20700	17276	15570	-1706	-9.9
North America	22863	22056	19379	17587	-1792	-9.2
IMPORTS						
EUROPE :						
- Coniferous	14225	19385	16217	15096	-1121	-6.9
- Broadleaved	17198	16162	17274	16276	-998	-5.8
TOTAL :	31423	35547	33491	31372	-2119	-6.3
of which :						
Finland	5208	4253	5942	6282	340	5.7
Italy	5909	6351	5425	4670	-755	-13.9
Austria	4373	6155	4700	4476	-224	-4.8
Sweden	1957	4704	4787	4273	-514	-10.7
Belgium-Lux	2151	2497	2314	...	...	...
Turkey	857	989	1005	2227	1222	121.6
Norway	1021	1075	1249	1291	42	3.4
Spain	2483	2201	2203	1182	-1021	-46.3
Germany, Fed. Rep. of	1945	1575	1679	1032	-647	-38.5
France	1344	1837	1303	976	-327	-25.1
Portugal	781	590	636	...	...	...
Netherlands	120	707	628	...	...	...
Other countries	3274	2613	1620	1385	-235	-14.5
Canada	1550	2281	5123	5101	-22	-0.4
United States	246	218	273	591	318	116.5
North America	1796	2499	5396	5692	296	5.5
Japan	27634	25372	25376	22625	-2751	-10.8

coniferous and non-coniferous. Again the greatest decrease came from Germany which almost halved its 1992 imports as production decreased and supplies in the forests from the remaining storm-felled timber were liquidated. Decreases of imports in other European countries were partially due to production decreases and increases of alternative fibre furnish, eg recycled wood fibre.

Increases in 1993 imports of industrial wood in the rough to Finland were a result of a turnaround in the production of nearly all pulp and paper and a corresponding increase in imports from Russia and the Baltic countries. Turkey's imports, at least partially from Bulgaria, increased considerably in 1993, by 121.6%.

North American imports of industrial wood in the rough increased by 5.5% with Canadian imports, primarily from the United States remaining about constant, and United States imports more than doubling on relatively low volumes.

B. CONIFEROUS SAWNWOOD

(i) Coniferous sawnwood consumption

The **apparent domestic consumption** of coniferous sawnwood in Europe in 1993 continued to fall, for the third consecutive year, by 5.6% in 1993 to 70.66 million m^3 (note that this figure does not correspond to the table's 71.94 due to an update received from Germany after printing the tables). The former USSR represented in the 1994 survey responses for coniferous sawnwood by the Russian Federation and Latvia, also fell for the third year, by 27.7% in 1993 to 27.34 million m^3. In 1993 North American consumption showed a small increase over 1992, by 1.2% to 124.81 million m^3, mainly due to the increase in United States imports discussed later. Timber Committee forecasts for 1994 are optimistic for increased domestic consumption throughout the ECE region (see Table 17).

The reasons for these differences within the ECE region vary little from the explanations in the last year's *Review*. In Europe, 1993 apparent consumption was stimulated by construction demand in some countries, eg Germany and the United Kingdom, but the average was lowered due to continued depressed construction in the majority of western countries including France, Switzerland, Belgium, Scandinavia and the majority of central and eastern countries. In fact, the European apparent consumption may be overestimated if those countries which have not supplied data, and which were therefore estimated at the same level of 1992, actually fell like the majority of reporting countries.

Data collection for the countries of the former USSR has not improved with the creation of the CIS. Reliable information for 1993 was received from the Russian Federation, which because of its resource size and production and trade capacities, dominates the ex-USSR statistics. It seems that some legislative developments are having the effect of slowing the drop in trade and production.

The North American market was buoyed by the improvement in the United States economy and the corresponding increase in residential housing and its advantageous effects on the whole forest and forest industries sector. Canadian export increases correspond with United States import increases as wood flowed south to make up for United States shortages created by increased demand and decreased supply. These trends, which can be shown in Graph 9 will be explained further in the next sections.

(ii) Production

Production of coniferous sawnwood was stable in 1993 in Europe and North America and fell approximately 24.8% in the former USSR (see Table 18). Dramatic 1993 production increases by Finland, by 20.3% over 1992, and by Sweden by 4.9% over 1992 were counterbalanced by decreases in most other European countries' production of coniferous sawnwood.

Germany decreased production in 1993, by 1.3 million m^3, for the first time in the last 8 years, to 10,587,000 m^3 (note that this figure was received after the tables were printed and due to higher estimation used to calculate European production totals and apparent consumption, these latter values are correspondingly too high in the tables); however, according to trade journals, April 1994's production had increased 19% over April 1993. It seems that Germany has finally processed the last of the 1990 storms' windthrown sawlogs and is perhaps coming back to a more normal production level in line with domestic and export demands. Sawmills are running at what is termed a "satisfactory" 85% capacity over the first 5 months of 1994 and in April mills ran at full capacity. Production in the new *Laender* is said to be up 60% in 1994 over relatively low levels in 1993; this represents 10 to 15% of total German production. Old *Laender* production is

Table 17
Sawn softwood balance in Europe, the former USSR and North America, 1989 to 1993
(million m³)

	1989	1990	1991	1992	1993 (prelim.)	Timber Committee estimates a/	
						for 1993	for 1994
EUROPE							
Production	73.25	73.79	68.85	68.55	c/	67.75	69.96
Imports	31.06	29.92	27.70	28.72	28.32	28.61	28.84
Exports	22.40	19.93	20.32	22.45	26.22	24.88	25.71
Net trade b/	-8.66	-9.99	-7.38	-6.27	-2.10	-3.73	-3.13
Apparent consumption	81.91	83.78	76.23	74.82	d/	71.48	73.09
former USSR							
Production	91.80	92.00	66.30	44.18	33.20	35.21	35.24
Imports	0.05	0.10	0.10	0.04	0.03	0.04	0.02
Exports	7.69	6.20	4.75	6.42	5.89	4.83	4.92
Net trade b/	7.64	6.10	4.65	6.38	5.86	4.79	4.90
Apparent consumption	84.16	85.90	61.65	37.80	27.34	30.42	30.34
NORTH AMERICA							
Production	146.61	138.24	129.30	136.99	137.04	139.24	138.56
Imports	33.22	29.67	28.06	31.88	36.25	34.55	36.88
Exports	48.37	44.48	43.71	45.52	48.48	46.46	46.99
Net trade b/	15.15	14.81	15.65	13.64	12.23	11.90	10.11
Apparent consumption	131.46	123.43	113.65	123.35	124.81	127.33	128.45

a/ At October 1993 session. The Committee's estimates for 1993 and 1994 have been adjusted to make them comparable with the historical (actual) data for 1989-1993.
b/ + = net exports; - = net exports
c/ Correct preliminary 1993 European production is 68.56 million m³. Explanation in text and on Table 18
d/ Correct preliminary 1993 European apparent consumption is 70.66 million m³.

Graph 9
Consumption of coniferous sawnwood, 1964 to 1993

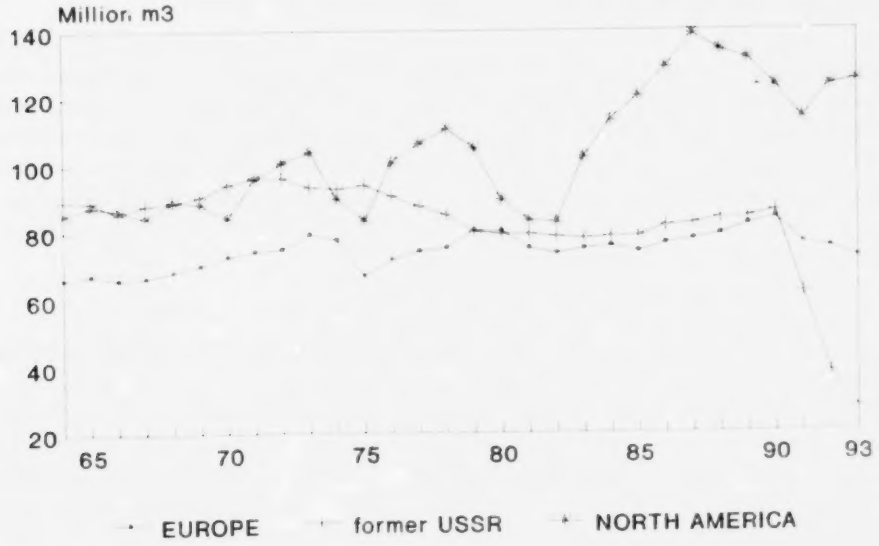


Table 18
Production of sawn softwood, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
			(1000 m3)			(%)
EUROPE	73790	68850	68551	1/	1/	1/
of which :						
Main exporting countries	45874	42570	44557	46475	1918	4.3
Sweden	11785	11237	11915	12500	585	4.9
Germany, Fed. Rep. of	10381	11599	11866	...	...	...
Finland	7400	5900	6900	8300	1400	20.3
Austria	7194	6904	6701	6558	-143	-2.1
Poland	3332	2593	3555	3631	76	2.1
former Czechoslovakia	4082	3037	2400	...	...	...
Portugal	1700	1300	1220	...	...	...
Other countries	27916	26280	23994	23362	-632	-2.6
of which :						
France	6955	6767	6500	6000	-500	-7.7
Turkey	3330	3330	3300	...	...	...
Norway	2400	2250	2350	...	...	...
United Kingdom	1935	1893	1916	...	...	...
Spain	2697	2559	1686	...	...	...
ex Yugoslavia	1769	1324	1324	...	...	...
Switzerland	1770	1542	1400	1300	-100	-7.1
former USSR	92000	66300	44175	33201	-10974	-24.8
Canada	53777	51037	55512	58651	3139	5.7
United States	84467	78260	81481	78387	-3094	-3.8
North America	138244	129297	136993	137038	45	0.0

[1] Correct preliminary 1993 European total is 68,558, a difference of 7,000 m^3 and 0% from 1992. This change was due to the data for Germany's 1993 production of 10,587,000 m^3.

reported up 18% in mid-1994 over the equivalent period in 1993.

Prices of *German* logs and sawnwood are moving up, the latter for the first time in four years. Sawnwood prices increased in the first quarter of 1994 by 10% over the relatively low prices in the first quarter of 1993, and an additional price increase for sawnwood is predicted in the second half of 1994. Prices were still below historical levels; since these price rises did not keep pace with increasing log prices, sawmill profitability was said to be suffering. Similarly, Austria's sawnwood prices, up 8% in the first quarter of 1994 compared to the first quarter of 1993,were not keeping pace with the 23% increase in sawlog prices.

Total North American production did not change as the United States production decreased by 3.1 million m^3 and Canadian production increased by the same quantity in 1993 from 1992. In 1992, the United States was able to increase production to meet its rising domestic demand, but in 1993 production fell as the real effect of raw material shortages from federal forest lands became apparent. For the first time in history, the United States was not capable of being self-sufficient in sawnwood production. The shortfall between sawnwood production and supply in 1994 is forecast at between 7.3 and 11.8 million m^3. This will lead the United States to increase imports (e.g. from Scandinavia, Russia, New Zealand and Chile) or to substitute sawnwood with other materials. With a recent court decision that unlocked some Pacific Northwest forests to harvesting, and in the face of further increases in United States housing contruction, it will be interesting to see if nationwide production can be maintained in 1994.

In 1993 Quebec increased production by 17.2% over 1992 for sawlogs and veneer logs, back to the record level of 1987; another increase is expected for 1994. Reasons for the increases throughout Canada include: the transfer of wood resource from the less profitable paper sector to the sawmills, higher yields and strong demand from the United States.

(iii) Trade

In 1993, **trade of coniferous sawnwood** increased in the ECE region, but the various sub-regions show diverging results over 1992 (see Table 19). *European* **exports** increased dramatically, by 16.8% in 1993 over the previous year, primarily due to the strength of Swedish and Finnish record high exports which improved 21.8% to 10.0 million m^3 and 33.3% to 6.1 million m^3 respectively during the same period. This increase was the result of a combination of factors including: strong demand in important European markets like the United Kingdom and Germany; an interruption of traditional supplies from North America due to increased United States demand coupled with new European phytosanitary regulations discussed below; a continuing decrease in Russian Federation exports; the result of Scandinavian currency devaluations in 1991 and 1992; and expansion in some non-European markets.

Exports from the *Russian Federation* fell 8.3% in 1993 over 1992 which was the fifth consecutive annual decrease. Based on limited information at mid-year, Russian sawnwood and log exports to Japan had increased over 1993 shipments, but exports to Europe remain depressed and buyers take whatever is available of the affordable timber.

Sweden's increased exports in 1993 were up by no less than 39% to the United Kingdom, 23% to Norway, 18% to the Netherlands, and 32% to Italy. In the first quarter of 1994, exports of sawn softwood advanced 14.5% to 2.6 million m^3 over the same period in 1993; most of the increase was to the United Kingdom. According to the Swedish Wood Exporters Association, the low prices of mill-run pine and spruce meant that returns to sawmillers were little better in 1993 than 1992. Prices increased for sawnwood in 1993 and early 1994 and further price rises are possible in the second half of 1994 (see annex table 7).

These upward price movements were verified by an unprecedented EC *A Posteriori* Monitoring of Finnish and Swedish wood and paper export volumes and prices mentioned in last year's *Review*. The objective of the study was to identify and evaluate effects of the depreciations of the Finnish mark and the Swedish crown on the imports of certain wood and paper products into the EU in general and France and Belgium in particular. According to the EC report, the exchange rate between the Finnish mark and the ECU was stable through mid-1991 when the mark floated downwards and finally devalued in March 1993; the mark which dropped in value, by 29.8% since mid-1991 in relation to the ECU, has been gradually rising in early 1994. The Swedish crown maintained stability until September and October 1992's major devaluations and the floating which followed in 1993; the crown had fallen by 18.9% in December 1993 compared to mid-1991 and like the Finnish mark, was rising in early 1994.

Table 19
Exports and imports of sawn softwood, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
	(1000 m3)					(%)
EXPORTS						
EUROPE	19934	20321	22451	26217	3766	16.8
of which :						
Sweden	6234	6931	8240	10040	1800	21.8
Finland	4154	4276	4638	6183	1545	33.3
Austria	4070	3962	3871	3850	-21	-0.5
Germany, Fed. Rep. of	839	960	945	945	-1	-0.1
Poland	295	275	486	898	412	84.8
Norway	630	643	809	870	61	7.6
Portugal	1060	762	745	...	...	...
former Czechoslovakia	836	981	700	...	...	...
former Yugoslavia	82	80	467	486	19	4.1
France	376	319	346	366	20	5.8
Other countries	1356	1132	1204	1134	-70	-5.8
former USSR	6200	4750	6417	5885	-532	-8.3
Canada	37465	36500	39352	42945	3593	9.1
United States	7010	7210	6166	5535	-631	-10.2
North America	44475	43710	45518	48480	2962	6.5
IMPORTS						
EUROPE	29923	27705	28717	28318	-399	-1.4
of which :						
United Kingdom	7923	6604	6899	6421	-478	-6.9
Germany, Fed. Rep. of	4246	4100	4458	4552	93	2.1
Italy	4422	4436	4402	4326	-76	-1.7
Netherlands	2515	2342	2501	...	...	...
Denmark	1482	1432	1660	1682	22	1.3
France	1717	1757	1401	1397	-4	-0.3
Belgium-Lux	1130	1300	1218	...	...	...
Spain	1080	1085	1217	970	-247	-20.3
Austria	557	576	629	677	48	7.6
Hungary	708	410	565	...	...	...
Norway	400	391	411	487	76	18.4
Other countries	3743	3272	3354	3522	167	5.0
Canada	998	880	757	645	-112	-14.8
United States	28670	27175	31127	35602	4475	14.4
North America	29668	28055	31884	36247	4363	13.7
Japan	7369	7792	7496	...	...	...

The EC monitoring study concluded in its second report dated May 1994, that Finnish paper prices had been gradually reducing before the devaluations and that prices were maintained or rose in marks after the devaluations such that the full effect was not translated into lower prices in importers' currencies. Following devaluation the quantities imported did not undergo significant changes to their upward trend. Swedish paper export prices and quantities were said to have followed similar movements.

Regarding sawnwood exports the report stated that the evolution of import prices for Finnish and Swedish pine and spruce sawnwood was generally downwards before the devaluations and that the devaluations "may well have allowed exporters to improve their financial situation." Quantities traded followed the inverse movement in prices. The study concluded that the strong downward movement in export prices are the result of long-term imbalances in the markets brought on by monetary evolutions and competitiveness. The devaluations were said to have contributed to the increase in market tension, to the benefit of the exporters who passed on part of the devaluation of currency while maintaining or even raising prices.

Finland's first quarter 1994 sales of sawn softwood totalled 3.4 million m^3, up 24% from 1993. Production of sawn softwood increased 10% over the same 1993 period and was at 1.9 million m^3. Sales to Europe were up more than those to other markets. Finnish sawn softwood exports totalled 1.5 million m^3 through the first quarter of 1994, up 12% from same period 1993. Prices rose in 1993 and again in 1994.

Sales to the *United Kingdom* from Scandinavia hit record levels in 1993 even though the underlying level of business in the United Kingdom remained depressed. In early 1994, United Kingdom imports of coniferous sawnwood were rising, partially due to the improved construction sector mentioned in the second chapter, as well as an attempt to increase imports in advance to further announced price increases. Canadian sawn softwood shipments to United Kingdom have fallen from 40% of United Kingdom imports in 1992 to 12% during 1993.

Poland also reported a remarkable 84.4% increase in coniferous sawnwood exports, to 898,000 m^3 in 1993; of this, 60% or 533,000 m^3 went to Germany, a 9.6% increase over 1992. Prices were up 5% in 1994 over 1993.

The statistics received from the *Baltic Countries* also indicate large increases in sawnwood exports. Complete data were unavailable, but Latvia's exports in total coniferous sawnwood exports in 1993 were 317,000 m^3, 51.0% above 1992's 270,000 m^3. The following figures are for Baltic exports to Germany:

	1992	**1993**	**Increase**
	(1000 m^3)	(1000 m^3)	(%)
Estonia	3.9	10.9	179
Latvia	20.4	85.6	291
Lithuania	12.9	50.5	291

Source: ZMP.

The decrease in North American sawnwood shipments to the United Kingdom opened markets to *Baltic Countries* which shipped 148,160 m^3 during the first quarter of 1994, primarily from Latvia.

Exports of coniferous sawnwood fell slightly in *Germany* as domestically-produced wood was consumed by their relatively good construction market (as compared to the general economy as noted in Chapter II). Timber Committee forecasts made in October 1993 were not optimistic for German trade in 1994, but as domestic demand remains strong for wood construction, production was reported up and the stocks are decreasing with advancing exports, especially to the Netherlands, Italy, Belgium, the United Kingdom and to a lesser extent France and Switzerland. *Austrian* exports show a similar slight drop, 0.5% in 1993 over 1992, but in the first quarter of 1994 exports were up strongly, 22% to 984,000 m^3, mainly due to a 9% increase to Italy (this was 9% over the average first quarters from 1989 through 1993).

In the *Russian Federation*, following a meeting of wood exporters in early 1993, a series of recommendations were given to the government to increase regulation of wood exports. A large portion of the decrease in production is due to the collapse of the former infrastructure (transport, spare parts, banking, etc.) which enabled factories to market their products. Links between the various enterprises have been broken, as well as those links to consumers of forest products and forest and factory production machinery. Additionally the introduction of quotas, licenses, customs duties had a negative effect on the forest and forest industries sector. Faced with a shortage of over 150 million m^3 of forest products (in roundwood equivalents), a Russian federal programme of development of the forest and forest industries sector was launched in 1994.

North American exports rose, by 6.5% in 1993 over 1992 due to large *Canadian* increases of 3.6 million m^3, a gain of 9.1% over 1992. Canada exported 82.0% of its sawnwood to the United States in 1993, up from 75.4% in 1992. The increase was due to several factors including the EU's phytosanitary regulations and the Canadian dollar's devaluation compared to the United States dollar (a fall of 23% between 1991 and mid-1994).

In 1993 as Canadian exports flowed south, its exports to other markets decreased. Exports to the United Kingdom in 1993 fell by 69.4% over 1992 to 564,276 m^3. Exports to continental Europe in 1993 from Canada fell 58.5% overall, to all overseas export markets, Canadian exports were 7.7% lower than in 1992.

United States exports of coniferous sawnwood fell in 1993 by 10.2% to 5.5 million m^3 over 1992 and continued to fall in early 1994, especially to Europe and Japan (down 20%). Only exports to Mexico and to Canada held their previous volume. Like Canada, United States exports to the United Kingdom fell, by 43.6%, to 58,056 m^3 in 1993 over 1992.

In the first quarter of 1994, North American exports were down from their pace in the same quarter of 1993. Strength of domestic markets drew United States sales from the primary and secondary ranked export markets, Southeast Asia and Mexico, and also Australia and the Caribbean; concurrently however, shipments to European destinations, United Kingdom, Germany, the Netherlands and France rose, as did those to the Middle East. United States exports of coniferous sawnwood fell 15% to 1.3 million m^3, though shipments value declined only 6% as prices of exports brought increased revenues.

Canadian overseas exports responding to the strength in the United States and domestic construction markets and were 18% lower in the first quarter of 1994 compared to the same period in 1993. Despite the relative weakness of the Canadian dollar, first quarter 1994 sales to the United Kingdom were down 32% from the same period in 1993 to 0.1 million m^3 and off 80% from 1990; sales to continental Europe were off 33%, to 0.1 million m^3. Shipments to Japan, the Canadians' second most important market were down 10%, to 1.2 million m^3 in the first quarter of 1994 in contrast to one year earlier.

European **imports** of coniferous sawnwood shrank 1.4% in 1993 over 1992 due to net decreases among reporting countries. Europe's largest importer, the United Kingdom, decreased imports by 6.9% in 1993 over 1992 due to lingering recessionary effects in the first half of the year, despite increased construction activity. Spain seemed to have come back down, by 20.3% in 1993, from the spike in imports in 1992; after 3 currency devaluations in 1992 and 1993 an improvement in Spain's apparent consumption and both its trade and production is predicted for 1994. Italy imported 4.3 million m^3 of coniferous sawnwood in 1993, a 1.7% decrease from 1992. General improvements in Italy's economy are predicted in the second half of 1994 now that a government has been formed; in the mid-year 1994 these forecasts were coming true as imports of coniferous sawnwood (and other forest products) showed improvement. The general trade improvement in Europe, predicted by the Timber Committee for 1994, seems to be coming true as by mid-year the major importing countries of United Kingdom, the Netherlands and Germany have substantially increased imports over the same period in 1993.

North American imports of coniferous sawnwood jumped 13.7% in 1993 due to a 14.4% increase to the *United States* and despite a 14.8% decrease to *Canada*, the large net increase is explained by the United States import volume in 1993, 35.6 million m^3. Canadian exporters turned away from the European market due to increased expenses to meet the new European Union phytosanitary requirements and instead focused on the expanding home construction driven demand in the United States and Southeast Asia. Canadian exporters view the growing economies in Asia as offering substantial long-term market opportunities as the domestic market is slowly reviving. The Canadian industry is continuing to focus on value-added and specialty products such as high-grade window and furniture stock, joinery and laminated components like glulam beams and finger-jointed stock.

(iv) North American developments for coniferous sawnwood

North America supply crisis was exacerbated in 1993 as United States housing construction commanded more timber and federal timber lands remained blocked. As 1994 unfolded, Canadian domestic consumption of sawnwood increased and harvesting restrictions were aggravated, especially in British Colombia, the nation's prime producer. In 1994 as North America's needs for timber increase with the new construction demand coupled with the renovation demand, an enormous at 2.4 million m^3 million shortfall was predicted.

Consequences of this shortfall could be increases in imports, decreases in exports and a boost in prices.

In April 1993 United States President Bill Clinton convened the Northwest Forestry Conference in Portland, ie the "Timber Summit", and commissioned a group of scientists to report back in 60 days on the safe volume of logging in the Pacific Northwest He gave the mandate to find a plan that's "scientifically sound, ecologically credible and legally responsible." The conference featured 51 panellists representing industry, environmental groups, loggers, Native Americans and silviculturists. Since 1990 the Northern spotted owl has been listed as a threatened species under the Endangered Species Act which resulted in court injunctions against logging in order to preserve the owl's habitat. Harvest levels in the PNW are but 20% of their historical levels.

In last year's *Review* it was reported that Option 9 had been selected by the United States Administration, but it was too early to report on the reaction. Option 9 proposes preserving 18 million acres of late-successional and old-growth forests for the Northern spotted owl and marbled murrelet and the draft environmental impact statement claims to have assessed impacts on an additional 1,080 species. The 90-day public comment period began on July 30, 1993 and immediately the Northwest Forest Resource Council, an industry coalition, filed a lawsuit against several government agencies.

In February a United States government environmental adviser reported that the environmental impact statement for the northern spotted owl would be issued and would include a 10% additional reduction of timber harvest to 2.6 million m^3 over the next decade. Option 9 had called for 2.8 million m^3 whereas the historical annual harvest from the PNW was 12.0 million m^3. In a "correction of an error in the economic model used for last summer's draft" of Option 9, the new estimate is for 9,500 logging and related job losses, up from the earlier Administration estimate of 5,500. The industry claimed these figures were low and did not include job losses from contraction of regional dependant businesses.

In March 1994 a United States District Court for the District of Columbia ruled in favour of the Northwest Forest Resource Council. It concluded that the Forest Ecosystem Management Assessment Team, which had developed the plan for the PNW, and which resulted in the administration's choice of Option 9, violated the Federal Advisory Committee Act because it was not an open process. Option 9, was expected to be signed in April and submitted to the federal judge whose decision placed virtually all federal timber sales in the PNW under injunction. The ruling rejected the Council's request for an immediate injunction on the Administration's forest plan, but left open the possibility for future legal challenges as the plan is translated into action.

Thus Option 9 was again the subject of lawsuits filed in May 1994 in United States federal court alleging that logging restrictions and old-growth reserves administered by the USDA Forest Service and the Department of Interior's Bureau of Land Management violate at least six laws; the suits were filed by the Northwest Forest Resource Council and many other groups, companies and individuals Subsequently in June 1994, the federal judge lifted the injunction on the previous management plan, which the new plan supersedes, and scheduled hearings for December 1994 addressing the objections of both forest user and preservationist plaintiffs. Following the lifting of the PNW logging ban, prices in the United States lumber futures market collapsed, however current market prices made no immediate deviation from their mid-1994 upward trend.

25 sawmills and panel plants closed permanently in the PNW in 1993, bringing the total closings to 340 since 1980. The 228 closed sawmills had a combined output of 19.3 million m^3 and 18,700 employees. The panel plants had 13,000 employees but the volume is uncalculated because of duplicated volumes from veneer and plywood. The rate of closings slowed in 1993 due to an increased availability of salvage and private timber and record high prices for end products, but accelerated closings are expected in 1994.

The Pacific Northwest environmental concerns do not stop at the border but continue on into British Columbia. British Columbia drafted a "Forest Practices Code" for implementation in autumn 1994. It seeks to balance "productive, spiritual, ecological and recreational values" and includes a ban on clearcutting where alternative harvesting systems are more appropriate, or on sites with visual quality objectives" and to place mandatory limits on clearcut sizes, unless the forest management objectives include silvicultural and harvesting plans. The code will be implemented by additional government funds and incentives to practice more intensive silviculture through higher stumpage fees. It is uncertain how much timber will be removed from harvest, but estimates range from 0 to 20%, ie the maximum reduction of 15 million m^3 per year of the

current harvest total of 75 million m^3. Compliance with a the Code could cost the forest products industry and the provincial government between C$110 and 500 million annually depending on the source. Costs include reductions in the annual allowable cut, costs to meet existing regulation and those for future changes to regulations.

In 1994, the United States Trade Representative filed an extraordinary challenge under the United States-Canada Free Trade Agreement to reverse two bi-national panels rulings that Canada does not subsidize its sawmillers and that their lumber imports do not harm the United States lumber industry. A decision by the Extraordinary Challenge Committee, a bi-national panel with binding authority, in July 1994 sent the issue back for study. Thus, the United States 6.51% duty continues to be collected and held in trust; if the issue is settled in favour of the Canadians, the roughly C$800 million collected will be returned to those companies which paid it.

In the United States recent natural disasters have cost billions to the Federal Emergency Management Agency alone: the California earthquake in January 1994 cost $8.6 billion, Hurricane Andrew in August 1992 cost $1.7 billion; Huricane Hugo in September 1989 cost $1.3 billion, and the Midwest floods in July 1993 cost $0.6 billion. The devastating earthquake which struck Los Angeles caused billions of dollars in destruction and subsequently escalated the demand for timber for rebuilding. Prices of timber immediately rose as did futures market trading prices.

Volatility in North American sawnwood prices continued in 1993 and the first half of 1994 (see Graph 10). Prices rose fast to mid-1993, then fell, and then rebounded to equivalent highs in early 1994 due to a variety of factors including increasing housing starts and the Los Angeles earthquake. From the peak in early 1994 the prices of sawnwood have gradually moved lower, as housing starts slowed because of weather conditions and harvesting resumed on PNW federal lands.

One result of escalating sawnwood prices is the potential for substitutions of solid sawnwood by composite products and non-wood materials. A poll of the United States National Association of Homebuilders in January 1994 found that 11% of homebuilders used steel framing as an alternative to timber and 34% more plan to use it in the future. While some builders have switched to steel due to a perceived cost advantage, others are attracted because steel prices are steadier than sawnwood prices.

(v) European developments

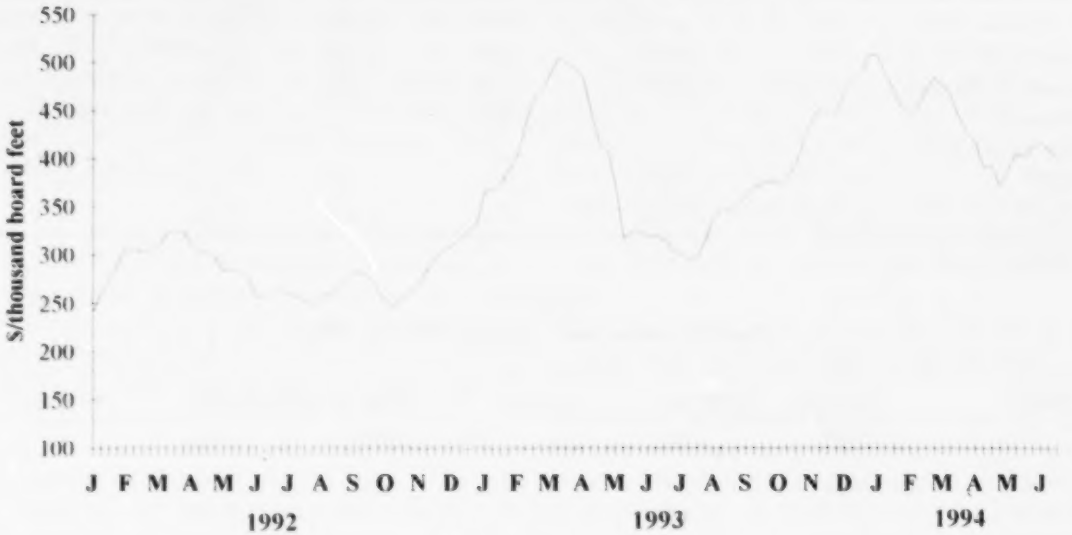
As the European Union's single market coalesces and as the individual member countries pull out of recession, domestic timber consumption should improve. As the single market develops performance-based standards, sawnwood's competitive position relative to other materials may improve. Stocks were generally low at the turn of the year and this trend is expected to continue as purchasers of sawnwood attempt to shift inventory carrying costs to sellers. An exception to this trend is precautionary stocks against increasing prices or quota limitations, (e.g. plywood before the GSP quotas took effect in 1994).

United Kingdom coniferous sawnwood trading continued to operate on a very short-term basis. United Kingdom imports from Canada collapsed in 1993 to about 0.8 million m^3, compared with 3.2 million m^3 in 1990. As a result, Scandinavian wood now represents more than 60% of United Kingdom imports. An import increase to 6.8 million m^3 was forecast by the Timber Committee for 1994; *Timber Trade Journal* forecasts rises of 2.5 million m^3 from Sweden, 1.25 million m^3 from Finland and 0.7 million m^3 from Russia.

Part of the reason for the collapse of Canadian shipments of timber to the EU was the phytosanitary regulations mentioned earlier. Discovery of sawyer beetle larvae in two shipments of Canadian lumber to Britain sparked a full ban on shipments of green lumber to the EU because the beetle larvae can carry the pinewood nematode. EU phytosanitary regulations that green coniferous timber be either kiln dried or pasteurized for protection against the pinewood nematode took effect in 1993. The process of establishing the regulations resulted from the discovery of the pinewood nematode in a shipment of North American chips to Finland in 1984. (Considerable damage has been done to Japanese forests by the pinewood nematode, possibly imported from North America). In order to prevent the possibility of nematode infestation in Europe the EC announced in 1985 that all softwood timber from countries where the nematode exists should be heat treated. Eastern Canadian shipments have been most effected.

Another important market for sawnwood, often from small-diameter roundwood, is that of *pallets*. Prior to the German packaging ordinance requirements the majority of pallets were "one-way." The legislation to

Graph 10
North American composite coniferous sawnwood prices, 1992 to 1994



Source: *Random Lengths Export.*

recycle packaging shifted demand very rapidly to reusable, standardized pallets. Consequently the change in demand for pallets resulted in a drop in the consumption of sawnwood by the western European pallet industry and relocation of pallet manufacture. Coupled with the imports of pallets from central and eastern Europe, where production costs are significantly less, some western European sawmills which were dependent on the pallet market for their low-grade sawnwood, closed. Another factor promoting the imports of pallets is that the higher value of reusable pallets supports higher transportation costs between manufacturer and customer. The market for German-produced pallets fell from 30 million in 1990 to 10 million in 1992. In 1989, Belgium imported 75,000 pallets from Poland, Hungary and the former Czech and Slovak republic, but these imports rose to 881,000 pallets in 1993.

By mid-1994 European coniferous sawnwood markets seemed to be improving. German imports of Scandinavian pine are expected to replace more expensive and less available United States southern yellow pine in 1994, although the same net volumes were forecast for import in 1993 and 1994 by the Timber Committee and other sources. Austrian average sawn softwood prices fell 12% in 1993 compared to 1992 but were rising by mid-year 1994. France reports increased coniferous sawnwood prices in 1994 as the construction market improves. Belgium has reported an improved sawnwood market.

Japan surfaced in 1993 as a new market for Swedish and Finnish spruce and pine, though purchases were small. Nordic exporters anticipate increased sales in 1994 to Japan, China, Taiwan, and South Korea.

(vi) Developments outside the ECE region

Japan imported a record high volume of both coniferous and non-coniferous sawnwood in 1993 over 1992, 10.6 million m^3, to supply the increase in housing construction. For comparison, total imports of sawnwood and logs were 34.9 million m^3 in 1992 and 34.1 million m^3 in 1993 (84% of the total import was coniferous from North America). Japanese 1994 wood products consumption, of which approximately 75% is imported, is forecast to increase due to the improved housing activity noted in Chapter II. A strong yen, which reached record highs versus the United States

Table 20

Japanese log imports, 1992 to 1993

Region	Volume (1000 m^3)		% change	Value (in million US$)		% change
	1992	1993		1992	1993	
North America	9,296	8,195	-11.8	2,062	2,430	17.9
Asia Pacific	12,277	9,652	-21.4	1,966	2,501	27.2
Russian Federation	4,185	4,973	18.8	424	557	31.5
Europe	6	101	1519.4	4	20	391.0
Latin America	6	6	-3.2	3	3	-7.0
Africa	133	514	287.2	43	149	249.2
Total	25,904	23,442	-9.5	4,501	5,660	25.7

Source: *Japan Lumber Journal*, 20 May 1994

Table 21

Japanese sawnwood imports, 1992 to 1993

Region	Volume (1000 m^3)		% change	Value (in million US$)		% change
	1992	1993		1992	1993	
North America	6,805	7,774	14.2	2,067	2,903	40.5
Asia Pacific	1,992	2,301	15.5	847	1,189	40.3
Russian Federation	227	288	26.7	42	59	41.8
Europe	10	260	2431.2	10	86	798.8
Latin America	10	12	28.8	5	7	40.2
Africa	3	9	211.5	2	5	174.4
Total	9,047	10,645	17.7	2,973	4,250	42.9

Source: *Japan Lumber Journal*, 20 May 1994.

Table 22

Timber prices for some Japanese imports, 1992 to 1994

Origin and Product	1992, end of first quarter	1993, end of first quarter	1994, end of first quarter	% increase 1992 to 1994
North America S/MBF				
Hemlock logs	540	670	900	66.7
Douglas fir logs	760	1050	1150	51.3
Douglas fir sawnwood	...	880	980	11.4[1]
Spruce/pine/fir sawnwood	360	400	560	55.6
Russian Federation S/m^3				
Fir logs	124	112	130	4.8
Chile S/m^3				
Radiata sawnwood	195	250	230	18.0
Southeast Asia S/m^3				
Sarawak meranti logs	102	300	240	135.3
Sarawak keruing logs	135	280	260	92.6
PNG calophyllum logs	101	380	220	117.8
Sabah seraya sawnwood	770	1250	1200	55.8

[1] % increase 1993 to 1994

Source: *Japan Lumber Reports*, 27 May 1994

dollar in June 1994, is expected to boost imports in 1994 in both value and volume.

Tables 20 and 21 show Japanese imports of logs and sawnwood: Japan decreased log purchases by 9.5% in 1993 over 1992 in volume terms, but the value of these imports was 25.7 higher than in 1992. While still purchasing over twice as much volume in logs as in sawnwood, (23.4 versus 10.6 million m^3), in value terms the difference is narrowing, $5.6 versus $4.3 billion. The unit value of log imports rose by nearly 40% (from North America by 34%, from Asia Pacific by 62%, from Russia by 10%).

Japanese log imports decreased from their principal suppliers, Asia-Pacific and North America due to supply restrictions. Large percentage increases in 1993 on small volumes in 1992 were made by European countries, especially Finland and Austria. They also started supplying Japan with sawnwood as did Sweden, Italy, Germany and Norway.

Japanese sawnwood imports increased by 17.7% in volume, but by 42.9% in value for a rise in unit value of 21% (similar for both main sources). Canada increased the volume and value of their sawnwood exports the most. The United States, despite domestic supply constraints, had the second highest increase in export values to Japan but volumes decreased. And in Japan's quest for additional sources of supply, the largest percentage increases, based upon small 1992 volumes and values, came from Europe and Africa.

The structural trend toward increased sawnwood purchases and decreased log purchases will continue (Japanese Southeast Asian log imports were forecast by *Japan Lumber Journal* to decrease dramatically in 1994, by 50%.). The demand for one value-added sawnwood product, glulam beams, is expected to double in Japan due to recent changes in building codes which allow 3 story wood-frame multi-family apartments and other large buildings; increases in structural lumber and panels were expected to follow this development. Through mid-1994, Japan is reported to have increased purchases of sawnwood, and to a lesser extent logs, from Finland, Austria and Germany over 1993's trial volumes.

Japanese imports of sawnwood from Siberia totalled about 250,000 m^3 in 1993 and is expected to increase to 300,000 m^3 in 1994. For reference, Japan's imports of Siberian coniferous logs recovered to 4.9 million m^3 in 1993 from lows in the early 1990s of approximately 4.3 million m^3. Japan has established joint ventures to insure supplies of logs and sawnwood and to improve quality and packaging of lumber. In early 1994 Japan's imports from Russia were progressing towards higher annual imports, while North American and New Zealand sources were reported slower than in 1993.

First quarter Japanese imports of European, especially Scandinavian, lumber and logs were double 1993's relatively low volumes, but a distinct trend is emerging. In 1992 log and lumber imports from Scandinavia were 3,622 m^3 total, but in 1993 the volume soared to 287,883. Imports from other European countries tripled in 1993, also from relatively low levels. Predictions based on increased first quarter imports were for one-half to one million m^3 of European timber imports in 1994.

Japan has paid increasingly more for imported timber over the last 2 years as indicated in table 22.

Radiata pine plantations are maturing and *New Zealand* harvest levels are expected to remain constant for the next couple of years at 16.2 million m^3 but to reach 23.0 million m^3 in 2005. New Zealand is rapidly increasing its output of plywood, lumber, MDF and particleboard. Log prices increased dramatically in 1993, but are forecast by *Random Lengths* to remain steady in 1994. *Chile's* sawnwood production and trade and timber harvest will rise modestly through 1995 with large increases anticipated in next 10 years as plantations mature.

C. NON-CONIFEROUS SAWNWOOD

(i) Consumption

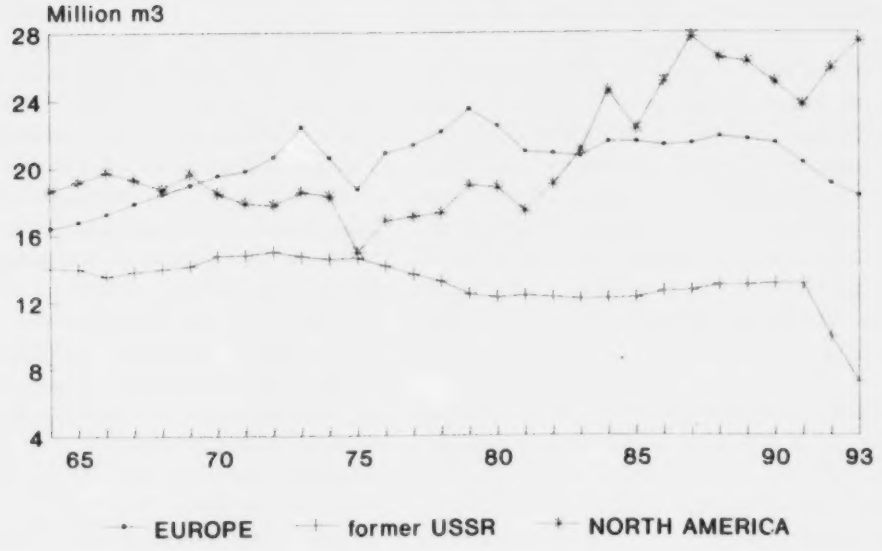
Apparent domestic consumption of non-coniferous sawnwood decreased in Europe for the fifth consecutive year, by 3.9% in 1993 over 1992 (see table 23, and graph 11). Production and trade fell, although a slight upturn was forecast for 1994 by the Timber Committee in their October 1993 session. Given these medium-term trends, it now appears likely that the decline in European consumption is structural. Possible reasons for this change could include: continuing recessions in the markets for furniture, flooring and cabinet markets for quality hardwoods; substitution of composite products for solid wood; a lack of demand for lower quality sawnwood (for example due to substitution of concrete railway sleepers/ties for wood). A possible distortion may be due to the rise in imports of processed products (e.g. doors, windows, joinery, notably from southeast Asia). These no longer appear in the statistics as "sawnwood". The industry is hopeful

Table 23
Non-coniferous sawnwood balance in Europe, the former USSR and North America, 1989 to 1993
(million m^3)

	1989	1990	1991	1992	1993 (prelim.)	Timber Committee estimates a/ for 1993	Timber Committee estimates a/ for 1994
EUROPE							
Production	17.83	17.44	16.67	15.20	14.82	15.03	15.51
Imports	6.83	6.89	6.46	6.78	6.25	6.55	6.60
Exports	3.01	2.85	2.85	2.94	2.77	2.87	2.82
Net trade b/	-3.82	-4.04	-3.61	-3.84	-3.48	-3.68	-3.77
Apparent consumption	21.65	21.48	20.28	19.04	18.30	18.71	19.29
former USSR							
Production	13.00	13.00	13.00	9.94	7.25	..	..
Imports	0.11	0.10	0.08	0.01	0.01	0.01	0.01
Exports	0.13	0.03	0.03	0.06	0.06	..	..
Net trade b/	0.02	-0.07	-0.05	0.05	0.05	..	..
Apparent consumption	12.98	13.07	13.05	9.89	7.20	..	..
NORTH AMERICA							
Production	27.18	26.39	25.11	27.26	28.90	27.60	28.27
Imports	1.53	1.17	1.12	1.24	1.47	1.35	1.64
Exports	2.45	2.54	2.56	2.62	2.92	2.77	2.77
Net trade b/	0.92	1.37	1.44	1.38	1.45	1.42	1.13
Apparent consumption	26.26	25.02	23.67	25.88	27.45	26.18	27.14

a/ At October 1993 session. The Committee's estimates for 1993 and 1994 have been adjusted to make them comparable with the historical (actual) data for 1989-1993.
b/ + = net exports; - = net imports.

Graph 11
Consumption of non-coniferous sawnwood, 1964 to 1993



that the popularity of solid wood, the consumer concern over tropical woods and the interest in non-traditional species, could improve the demand for temperate non-coniferous species.

In the former USSR, apparent consumption decreased in 1993 by 2.7% over 1992; production dropped, imports were minimal and exports remained at low 1992 levels. North American consumption of non-coniferous sawnwood improved by 6.1% with increases in both net trade and production .

(ii) Production

Production of non-coniferous sawnwood continued its decade of decline in Europe by falling another 2.5% to 14.8 million m^3 in 1993 over 1992 (it was over 19 million m^3 in the 1970s, reaching a record level of 19.8 million m^3 in 1979 -- however it is possible that this is the last year of decline as the Timber Committee forecast improved production in 1994. This forecast was being fulfilled in the first quarter of 1994 in some countries as the demand for higher quality sawnwood was up (according to a press release by the European Sawmillers Organization). Prices for high quality sawnwood were maintained, but difficulties existed in finding markets for lower qualities. Many European sawmills were affected by the loss in the railway sleeper/tie market to concrete and in the pallet market to coniferous, reusable pallets (instead of hardwoods as described earlier).

Based on individual European country data shown in Table 24, and Timber Committee estimates for 1993, the only countries with 1993 production increases were Germany, Romania and Spain. In the first quarter of 1994, Germany's production fell approximately 7% from the first quarter of 1993 due to a general lack in demand and competition in furniture manufacturing from MDF and particleboard. Furniture and cabinet manufacturers have found strong demand for lower-priced, less-known species like alder and tulipwood; alder comes from both European and North American sources, while tulipwood, also known as yellow poplar, comes primarily from the Appalachian region of the United States.

From the table, France, the European production leader was estimated to have registered a 6.1% drop in 1993 over 1992. The hardwood industry in France is suffering under the general economic recession which has distinctly hurt domestic markets including housing and the resultant demand for furniture, cabinetry and millwork. France's export markets have been subject to competition from temperate woods from eastern Europe and North America. In the first quarter of 1994, French sawnwood prices were stagnant, but with log prices up 20%, sawmills were said to be relatively unprofitable.

Statistics received from the former USSR countries show a 27.1% drop in production to 7.2 million m^3, 44.2% below 1990 and 1991.

Table 24
Production of non-coniferous sawnwood, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Percent
			(1000 m3)			(%)
EUROPE :	17441	16666	15197	14815	-382	-2.5
of which :						
France	3817	3933	3300	3100	-200	-6.1
former Yugoslavia	2010	1880	1880	...	...	...
Germany, Fed. Rep. of	1775	1723	1630	...	...	...
Romania	1525	1185	1600	...	...	...
Turkey	1545	1550	1500	...	...	...
Italy	1050	1000	1000	900	-100	-10.0
Spain	570	603	782	...	...	...
Poland	663	509	525	549	24	4.6
Hungary	767	735	311	...	...	...
Belgium-Lux	250	270	270	...	...	...
former Czechoslovakia	602	523	250	...	...	...
Denmark	400	400	252	245	-7	-2.8
Other countries	2467	2354	1897	1798	-99	-5.2
former USSR	13000	13000	9935	7245	-2690	-27.1
Canada	1131	1003	806	1123	317	39.3
United States	25261	24103	26456	27780	1324	5.0
North America	26392	25106	27262	28903	1641	6.0

In contrast, North American production increased 6.0% with Canada increasing 39.3% to 1.1 million m^3 in 1993 over 1992 to regain production levels of 1990. The United States increased non-coniferous sawnwood production by 5.0% or by 1.3 million m^3 to 27.8 million m^3. Prices increased to record highs in 1993 spurred by strong United States domestic demand as well as continued strength in Asian markets and recovering demand in Europe, especially the United Kingdom. In early 1994 prices moved lower as the market re-established its equilibrium (graph 12).

The worst floods in United States history spread throughout the prime hardwood region of the Mississippi and Missouri River valleys in 1993 and interrupted production and shipments of non-coniferous sawnwood. Trees in the floodplain withstood constant submerging of their roots and lower trunks, but concerns exist over regeneration lost from seedlings which were either unable to withstand submerged foliage or were swept away by water currents. Where topsoil was removed, the floods left sand in their wake; regeneration on these poorer soils is a current concern. A demand for sawnwood (although mostly coniferous and panel products) resulted from rebuilding operations.

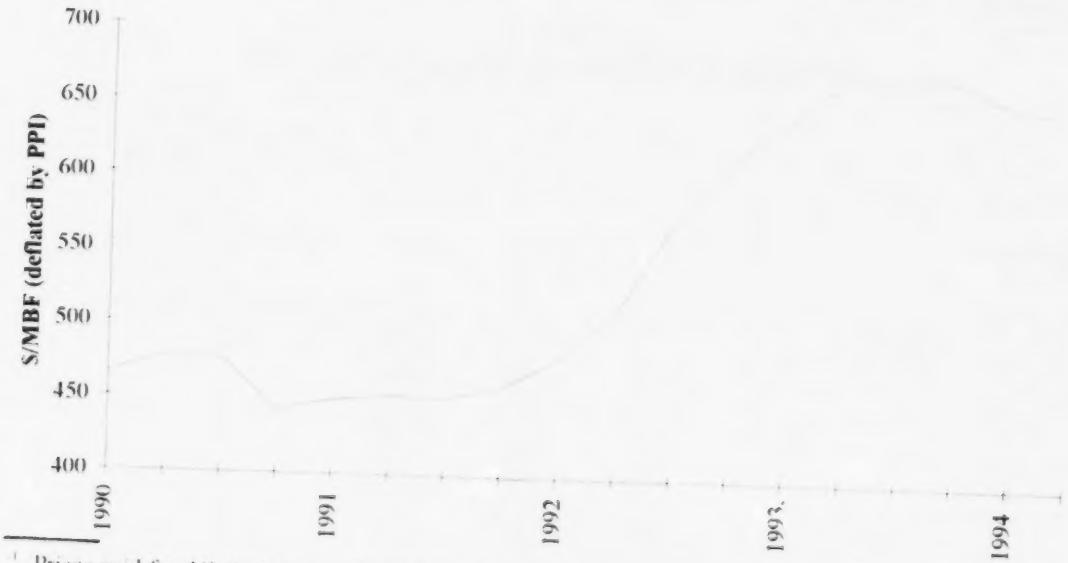
(iii) Trade

European **non-coniferous sawnwood exports** fell 5.8% in 1993 over 1992 to 2.8 million m^3 (Table 25). The majority of the decrease is attributable to an estimated drop in the former Yugoslavia, the largest European exporter of non-coniferous sawnwood, based on statistics received from Slovenia and Croatia and estimations for the other former Yugoslavian states. France suffered a large drop in exports, by 20.7%, which was attributed to competition for recession-plagued markets from central and eastern European countries and North America. German exports continued to decline as domestic construction and furniture markets consumed available production.

Canada increased non-coniferous sawnwood exports significantly, by 51.6% in 1993 over 1992, to 0.6 million m^3. Combined with the *United States*' 3.6% increase, to 2.3 million m^3 in 1993 over 1992, due to renewed strength in Asian markets, North American exports advanced 11.4%.

Non-coniferous sawnwood **imports** also fell in Europe in 1993 over 1992, by 7.8% to 6.3 million m^3. Italy,

Graph 12
United States non-coniferous sawnwood price, 1990 to 1994



[1] Prices paid for 4/4 (ie 1-inch (2.54 cm) thick), 1 common grade, Appalachian region red oak sawnwood deflated by the United States Producer Price Index--base 198

Source: *Hardwood Market Report.*

Table 25
Exports and imports of non-coniferous sawnwood, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
EXPORTS			(1000 m3)			(%)
EUROPE :	2854	2845	2944	2773	-171	-5.8
of which :						
former Yugoslavia	714	713	832	797	-35	-4.2
France	731	691	668	530	-138	-20.7
Germany, Fed. Rep. of	342	304	288	226	-62	-21.5
Netherlands	219	238	226	...	...	...
Belgium-Lux	137	188	180	...	...	...
Hungary	101	152	169	...	...	...
Romania	121	21	120	...	...	...
Austria	109	101	90	92	2	2.2
Switzerland	58	61	60	65	5	8.3
Italy	38	34	34	63	29	85.3
Other countries	285	342	278	305	27	9.9
Canada	472	480	426	646	220	51.6
United States	2072	2079	2197	2275	78	3.6
North America	2544	2559	2623	2921	298	11.4
IMPORTS						
EUROPE :	6894	6461	6775	6249	-526	-7.8
of which :						
Italy	1569	1612	1328	1274	-54	-4.1
Belgium-Lux	538	591	944	...	...	...
Netherlands	872	733	786	...	...	...
Germany, Fed. Rep. of	781	733	819	626	-193	-23.6
Spain	844	735	737	583	-154	-20.9
United Kingdom	833	676	626	509	-117	-18.7
France	550	488	554	406	-148	-26.7
Austria	128	149	133	126	-7	-5.3
Portugal	70	86	120	...	...	...
former Yugoslavia	12	12	101	119	18	17.8
Other countries	697	645	628	757	129	20.5
former USSR	100	75	7	8	1	11.4
Canada	563	586	631	725	94	14.9
United States	602	534	613	740	127	20.7
North America	1165	1120	1244	1465	221	17.8
Japan	1669	1608	1551	...	...	...

Europe's largest importer of non-coniferous sawnwood, led decreases in almost every country as illustrated in the accompanying table. The ex-USSR continued imports at a minimal level. North American imports of non-coniferous sawnwood surged 17.8% due to increases in tropical hardwoods to the United States and Canada's imports of United States hardwoods. United States imports of non-coniferous sawnwood was directly related to the increased home construction and the corresponding demand for millwork and furnishings.

(iv) Non-coniferous sawnwood trade--temperate zone

The foregoing discussion of non-coniferous trade is primarily temperate, but tropical sawnwood was included in imports. In *North America* the *United States* housing starts improved markets for millwork, cabinetry and furniture creating a strong demand for hardwoods. Concurrently the export markets improved and prices rose dramatically with this combined demand

(graph 12). Exports to Europe fell 9.2% to 0.8 million m^3 in 1993 over 1992 with Germany being the exception (up by 13.8% to 0.2 million m^3). Decreases in United States exports to Europe were attributed to weakness in economies and currency devaluations (Italy and Spain) compared to the United States dollar especially in light of rising prices. Conversely, United States shipments to Asia increased 16.6% to 0.7 million m^3 as the appreciating yen kept United States exports competitive and Japanese demand was strong. Thailand also increased United States sawnwood imports as its growing furniture production with 1650 plants and the domestic ban on harvesting necessitated imports (source: *Import/Export Wood Purchasing News*, April/May 1994).

European importers incurred the effects of the increasing import prices for both temperate and tropical species, but domestic sawnwood prices in 1993 moved up for high quality hardwoods and remained firm in early 1994.

(v) Non-coniferous sawnwood trade--tropical zone

The entire tropical timber trade is in the midst of a fundamental structural reorganization on both the consumer and the producer sides. Producers are changing their forest management practices in order to meet their expanding domestic timber needs as well as the export market demands. In a drive for sustainably managed forests, from ecological, economical and sociological standpoints, producer countries have changed management practices, altered exporting practices, and promoted value-added processing through industrial and market development as well as taxes, tariffs and bans on exports. Rapid economic and population growth in some southeast Asian developing countries has manifested itself in an explosion of residential and other building construction with a net result of increased domestic consumption of their native timber.

Consumers have reacted to increasing prices and shortages in traditional supply channels in a rational manner by purchasing from alternative sources or substituting equivalent species. Japanese imports of tropical sawnwood and logs, which are the largest in the world in both volume and value terms, have shifted from traditional southeast Asian sources to include a variety of new supply sources including Latin America and Africa. In addition, the Japanese have begun substituting coniferous for traditional tropical species uses such as concrete forming. Due to tropical and North American timber supply shortages, the Japanese have significantly increased purchases of European coniferous logs and sawnwood.

From ITTO forecasts, for ITTO countries which represent about 75% of tropical timber producers, made in mid-1993, tropical timber *exports* were expected to decrease significantly for logs and sawnwood, by 27.0% and 5.4% respectively in 1993 from 1992. This would be the largest annual decrease in the last five years; from 1989 to the forecasts in 1993, tropical timber exports from log exports for all ITTO producer countries fell 40.1% and sawnwood exports fell 23.6%. However, veneer and plywood exports were forecast to increase in 1993 over 1992 by 8.3% and 0.9% respectively; over a five-year period from 1989 to 1993, veneer shows a large percentage increase in exports, 95.2%, based on a relatively small initial 1989 volume of 0.6 million m^3 and plywood exports increased 18.0%. These trends are not consistent by region, but are dominated by the largest producing and exporting region, that of the southeast Asia-Pacific with Africa following suite (table 26). The Latin America/Caribbean region shows an opposite trend with small increases in all export categories.

These trends are less pronounced in *production* of tropical timber where logs and sawnwood were forecast to fall 3.4% and 3.3% respectively in 1993 from 1992. Veneer production in 1993 over 1992 was to have increased by 6.3% and plywood production by 1.4% over the same period. These forecasts are consistent with the five-year trend of decreasing log production, by 19.9% from 1989 to 1993, and for decreasing sawnwood production, by 17.6% over the same period. Veneer and plywood production continue to grow, by 50.8 and 14.1% over the 1989 to 1993 period (see table 27).

Malaysia's 1993 timber exports reached a record of 1.2 billion Malaysian ringgits, up 7% from 1992 but the volume of timber exported decreased. Much of the increase in export value was due to higher prices of sawnwood. Malaysia's main customers for sawn timber were Japan, South Korea, Taiwan and China accounting for 40%, Thailand, Singapore and the Philippines accounting for 33%, and the EU accounting for 15%. The government increased export duties on some species of sawn timber by 100% in 1993 for exports to southeast Asia. Exports of rubberwood sawnwood were to be banned in 1994 to meet domestic demand and encourage value-added processing. Other changes in Malaysian exports in billions of Malaysian ringgits were:

Table 26
Tropical Forest Products Exports[1], 1989 to 1993
(thousand m^3)

	1989	1990	1991	1992	1993[2]	% change 1993/1992
Africa						
logs	3,684	3,914	3,320	3,435	3,443	0.2
sawnwood	960	1,201	1,010	1,037	1,065	2.7
veneer	197	195	171	193	206	6.7
plywood	75	60	79	78	83	6.4
Asia-Pacific						
logs	22,474	21,479	20,732	18,429	12,637	-31.4
sawnwood	9,171	5,652	5,987	6,258	6,100	-2.5
veneer	340	423	546	744	816	9.7
plywood	9,103	9,443	10,166	10,206	10,665	4.5
Latin American/Caribbean						
logs	5	4	4	0	1	100.0
sawnwood	444	544	394	503	531	5.6
veneer	41	56	51	99	99	0.0
plywood	372	288	381	424	428	0.7
Total						
logs	26,163	25,397	24,056	21,864	16,081	-26.5
sawnwood	10,575	7,397	7,391	7,798	7,696	-1.3
veneer	578	674	768	1,036	1,121	8.2
plywood	9,550	9,791	10,626	10,708	11,176	4.4

[1]Values differ from FAO statistics as ITTO coverage is 75% of tropical producers. ITTO values were used for comparison to their 1993 forecast.
[2]Forecast made in 1993.
Source: *Annual Review and Assessment of the World Tropical Timber Situation, 1992*, ITTO, 1993.

Table 27
Tropical Forest Products Production[1], 1989 to 1993
(thousand m^3)

	1989	1990	1991	1992	1993[2]	% change 1993/1992
Africa						
logs	9,387	10,440	8,842	8,914	9,020	1.2
sawnwood	2,236	2,073	1,762	1,778	1,777	0.0
veneer	321	358	302	327	353	8.0
plywood	276	240	252	268	278	3.7
Asia-Pacific						
logs	100,642	97,893	99,943	99,560	93,880	-5.7
sawnwood	29,155	27,966	28,305	28,822	28,750	-0.3
veneer	638	723	952	1,198	1,265	5.6
plywood	10,405	10,663	11,375	12,210	13,090	7.2
Latin American/Caribbean						
logs	33,050	28,292	24,551	27,367	27,379	0.0
sawnwood	10,998	9,318	8,564	8,597	8,676	0.9
veneer	255	251	253	261	260	0.0
plywood	1,432	1,472	1,322	1,376	1,388	0.9
Total						
logs	150,079	136,625	109,336	135,841	130,279	-4.1
sawnwood	42,389	39,357	38,631	39,179	39,203	0.1
veneer	1,212	1,332	1,507	1,786	1,878	5.2
plywood	12,113	12,375	12,949	13,854	14,756	6.5

[1]Values differ from FAO statistics as ITTO coverage is 75% of tropical producers. ITTO values were used for comparison to their 1993 forecast.
[2]Forecast made in 1993.
Source: *Annual Review and Assessment of the World Tropical Timber Situation, 1992*, ITTO, 1993.

	1992	1993	% change
Logs	4.1	2.7	-50.0
Sawnwood	3.4	4.4	29.4
Plywood	1.4	2.2	57.1
Furniture	0.7	0.88	25.7
Mouldings	0.6	0.5	-16.6

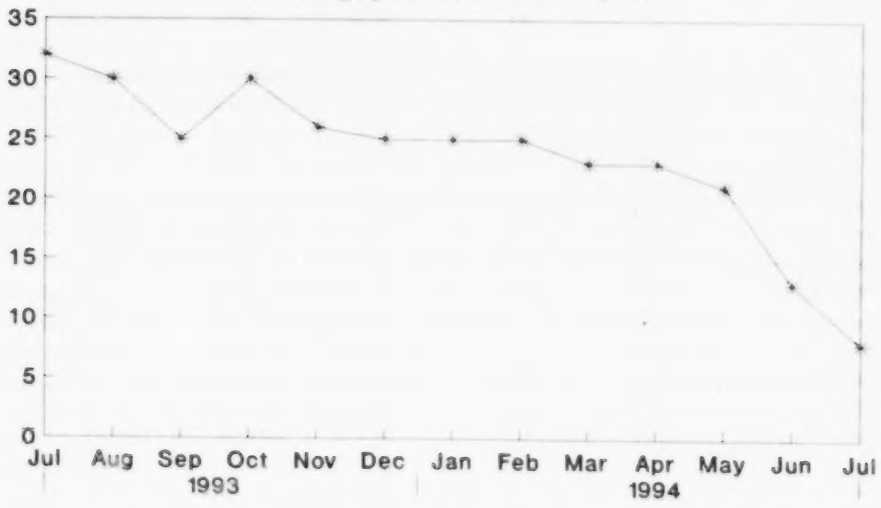
Log exports fell 50% to 9 million m^3, due to new forest management practices in Sarawak and the ban of log exports in Sabah in April 1993. Half of these logs went to Japan, while the rest went to South Korea, Taiwan and China. The main market for furniture is China, 33%, then Singapore, then Japan; United States furniture exports from Malaysia were growing and EU declined from 15% in 1992 to 5% in 1993.

Plywood prices continued to fall in southeast Asia in 1993, largely due to current overcapacity and oversupply for markets faced with recessions and substitutions (see graph 13). The two largest markets for tropical plywood, Japan and the European Union, both faced lingering recessions in 1993 which reduced demand for tropical plywood. Despite increases in housing starts in Japan and some European countries in 1993, tropical plywood also depends heavily on other types of construction where it is used for concrete forming. Substitution of coniferous plywood and OSB are also offsetting demand for tropical plywood. In 1993 and early 1994, Brazilian plywood also gained market share in Europe and North America due to competitive pricing.

Also disrupting the plywood market was the European Union's *Generalised System of Preferences* (GSP) which established a duty free quota for the first 600,000 m^3 and then afterwards applied a 10% duty to all additional imports in 1993. In 1994 the system was modified: in the first half of the year the first 600,000 m^3 were dutyfree with a 10% duty charged until July when a revised scheme was to be initiated. The GSP results in importers trying to anticipate and buy for their needs before the duty is in force. The result for the current period was heavy purchasing in November and December 1993 for early January 1994 delivery, and then a lack of purchasing or minimal purchasing to fill orders. This distortion of the market can be difficult for both importers and exporters alike.

Prices of tropical logs and sawnwood also rose dramatically in 1993 but have levelled off or declined as shown in graphs 14, 15 and 16. Price rises have resulted in increasing value of exports, despite decreasing volumes. Further price rises are anticipated as long as their fundamental causes persist, e.g. export restrictions (quotas, bans, duties, taxes and tariffs) on logs and sawnwood, increasing domestic consumption of sawnwood and logs and more value-added processing in producer countries. Rising prices for southeast Asian sawnwood, partially due to increased domestic consumption and new consumers in China, India and Pakistan, have turned European buyers' attention to African and Brazilian species where domestic consumption and prices are lower.

Graph 13
Plywood prices in Indonesia, July 1993 to July 1994
(Percentage paid above 1993 list price)

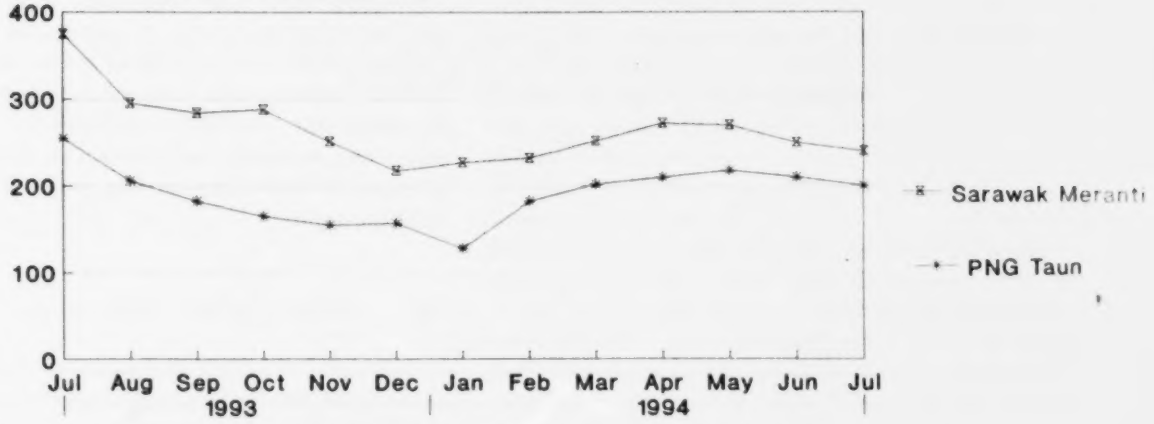


Source: Market News Service/International Trade Center UNCTAD/GATT

Graph 14

Log prices in Sarawak and PNG, July 1993 to July 1994

($/m^3$, FOB for Sarawak meranti and PNG taun)

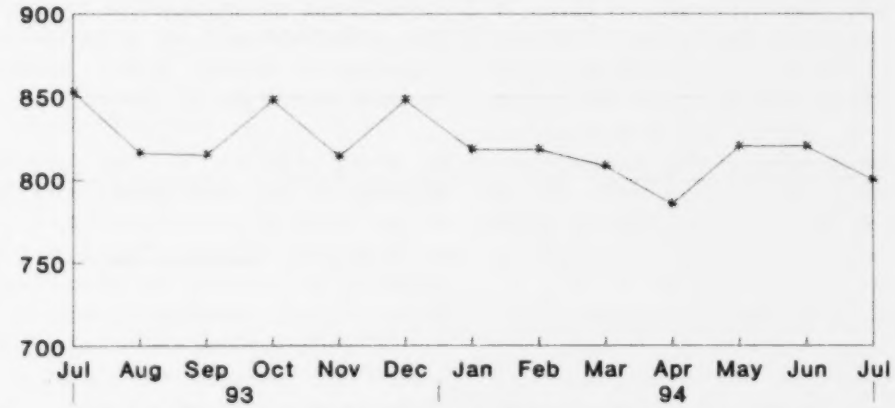


Source: Market News Service/International Trade Center UNCTAD/GATT

Graph 15

Sawnwood prices in Malaysia, July 1993 to July 1994

($/m^3$, FOB for dark red meranti)

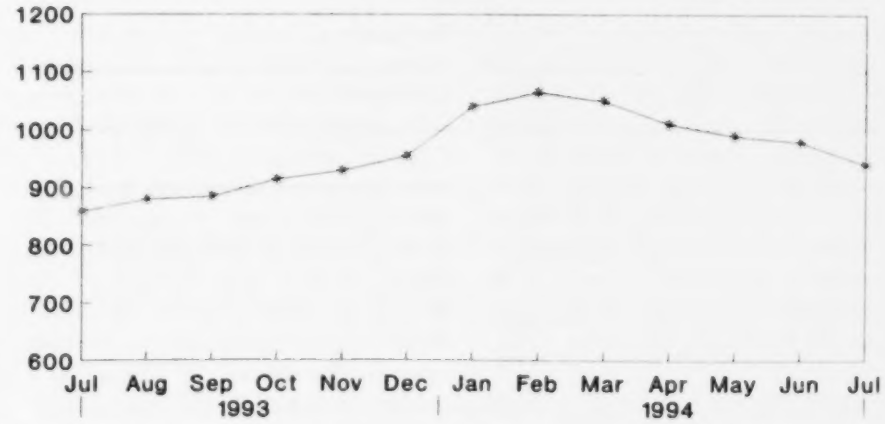


Source: Market News Service/International Trade Center UNCTAD/GATT

Graph 16

Sawnwood prices in Brazil, July 1993 to July 1994

($/m^3$, FOB for kiln dried, FAS grade swietenia (mahogany))



Source: Market News Service/International Trade Center UNCTAD/GATT

Another factor that will initially lead to higher prices for some tropical timber is the establishing of *certification schemes* to identify timber produced on a sustainable basis. At the moment timber certification programs have been initiated by a number of public and private groups. Additionally some groups are seeking to verify the credibility of wood-certification programs around the world, notably the Forest Stewardship Council (FSC), sponsored by the WWF (World Wildlife Foundation). The FSC is divided into 2 groups: "economic" (certifiers, industry, retailers, and end-users of forest products) and "other" (social/indigenous, environmental and labour organizations). The "other" group has 75% of the assembly vote. The Assembly also created a nine-member board which represents both groups and charged it with revising the certification principle and criteria and developing membership criteria and an application process.

The *CFA franc*, the currency used by the francophone countries of Africa, devaluated substantially, by 50%, in early 1994 throwing confusion into the future of African timber exports and their prices. The fixed exchange rate of 50 CFA to 1 French franc had existed since 1948, but in recent years exports of those African countries were less competitive. The local markets in African francophone countries already had difficulties with poor log supply and high log prices and the situation was likely to worsen as CFA log prices climbed.

The effect of the CFA devaluation will establish new trading patterns. In the short term the devaluation will be to producers' advantage but in the longer term countries attempting to increase value-added processing and modernising existing saw and plywood mills will find imports of machinery more expensive in CFA terms. A concurrent development is the harmonizing of import and other taxes which will increase import duty to 15% and value-added taxes to 14%.

The *International Tropical Timber Agreement, 1994* is expected to come into operation for 4 years starting in 1995 if ratified by the required number of countries from the agreement signers: 23 producers and 27 consumers of tropical timber. Initially a consensus on the wording was reached in Geneva in February 1994, but the European Union, Austria and China were unable to ratify it without further study. The agreement will cover the trade of tropical timber (all non-coniferous wood for industrial purposes that grows between the Tropic of Cancer and the Tropic of Capricorn.

It was resolved that the ITTA would cover only tropical timber but would provide a "framework...for all relevant aspects of the world timber economy." "The Bali Partnership Fund" was established to assist producing members make investments to sustainable management. The Agreement also is designed not to restrict trade of tropical timber and to promote research and development, market intelligence, value-added processing, marketing and distribution, national policies of sustainable development and access to and transfer of technologies.

D. WOOD-BASED PANELS

Preliminary 1993 data for apparent consumption of wood-based panels (excluding veneer sheets) in *Europe* continued to decrease, for the fourth consecutive year, to 37.8 million m^3, 1.2% or some 400,000 m^3 below the 1992 level. The drop, however was not as important as in 1992, when consumption fell by some 1.2 million m^3 (table 28). In 1993 apparent consumption of particle board and plywood fell by some 200,000 m^3 each while fibreboard, due to the continued dynamic expansion of medium density fibreboard (MDF), remained close to the 1992 level.

In *North America*, on the contrary, apparent consumption of wood-based panels in 1993 increased for the second consecutive year by 4.4% to 44.3 million m^3, or almost 1.9 million m^3 above the 1992 level, thus confirming the recovery due to continued increasing demand from the construction sector. Consumption of particle board, including waferboard and oriented strand board (OSB) increased by 9.4% while plywood and fibreboard showed minor increases. OSB mills were running near full capacity and continued to gain market shares over plywood in the structural panel sector (table 29).

(i) Particle board

Production of particle board in *Europe* showed a minor increase in 1993 of 1.5%, to 27.7 million m^3. The production increase in Germany, close to 0.5 million m^3, compensated for production cutbacks in other countries, notably in France where six production lines were closed and output fell by 4.5% or 120,000 m^3 (table 30 and graph 17 and table 31). Preliminary production data for Belgium, another major producer in Europe, show a 3.4% increase. Poland and Finland showed important increases of some 120,000 m^3 and 85,000 m^3, respectively, as Finland resumed near capacity production. In Poland the export furniture industry absorbed the rise in production, and Finland

Table 28
Apparent consumption of wood-based panels (excluding veneer sheets) in Europe and the former USSR, 1989 to 1993

	Volume					Percent of total	
	1989	1990	1991	1992	1993 (prelim.)	1989	1993 (prelim.)
EUROPE	(million m3)					(%)	
Particle board	29.97	28.90	29.11	27.67	27.48	72.3	72.6
Plywood	6.49	6.41	5.84	6.07	5.82	15.7	15.4
Fibreboard	4.98	4.67	4.57	4.56	4.53	12.0	12.0
Total	41.44	39.98	39.52	38.30	37.83	100.0	100.0
Change on previous year							
- Volume		-1.46	-0.46	-1.22	-0.47		
- Percent		-3.5	-1.2	-3.1	-1.2		
former USSR							
Particle board	7.84	6.17	5.58	4.20	3.66	57.6	67.9
Plywood	1.91	1.40	1.32	0.91	0.60	14.0	11.1
Fibreboard	3.87	3.87	3.87	1.41	1.13	28.4	21.0
Total	13.62	11.44	10.77	6.52	5.39	100.0	100.0
Change on previous year							
- Volume		-2.18	-0.67	-4.25	-1.13		
- Percent		-16.0	-5.9	-39.5	-17.3		

Table 29
North American apparent consumption of wood-based panels (excluding veneer sheets), 1992 to 1993
(1000 m^3)

	1992	1993	Change 1992 to 1993 Volume	Percent
Apparent consumption				
Canada	3988	4154	166	4.2
United States	38423	40129	1706	4.4
North America	42411	44283	1872	4.4
Production				
Canada	6067	6996	929	15.3
United States	36957	37720	763	2.1
North America	43024	44716	1692	3.9
Imports				
Canada	390	539	149	38.2
United States	3808	4628	820	21.5
North America	4198	5167	969	23.1
Exports				
Canada	2469	3381	912	36.9
United States	2342	2219	-123	-5.3
North America	4811	5600	789	16.4

Table 30
Production and trade of particle board (including non-wood), 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
			(1000 m3)			(%)
PRODUCTION						
EUROPE :	28402	28652	27307	27723	416	1.5
of which :						
Germany, Fed. Rep. of	7109	7441	7451	7935	484	6.5
France	2464	2638	2668	2548	-120	-4.5
Belgium-Lux	2222	2323	2350	...	...	...
Italy	3050	3030	2265	2250	-15	-0.7
Spain	1790	1795	1680	1660	-20	-1.2
Austria	1529	1689	1606	1595	-11	-0.7
United Kingdom	1517	1600	1414	1363	51	-3.6
Poland	718	941	1008	1126	118	11.7
Turkey	636	636	947	883	-64	-6.8
Switzerland	722	699	762	742	-20	-2.6
Portugal	805	787	630	...	...	...
Sweden	843	762	581	597	16	2.8
former Czechoslovakia	950	749	560	...	...	...
Finland	526	385	354	439	85	24.0
Other countries	3522	3178	3031	3045	14	0.5
former USSR	6397	5692	4819	4159	-660	-13.7
EXPORTS						
EUROPE :	6215	6395	6423	6641	218	3.4
of which :						
Belgium-Lux	1668	1819	1818	...	...	...
Germany, Fed. Rep. of	1029	1001	980	994	15	1.5
Austria	1022	926	871	891	20	2.3
France	588	718	760	646	-114	-14.9
Switzerland	380	386	464	480	16	3.4
Portugal	483	475	361	...	...	...
Spain	74	137	148	302	154	103.7
Finland	184	132	95	195	100	105.3
Norway	153	143	143	149	6	4.3
Other countries	634	659	784	805	21	2.7
former USSR	234	110	619	499	-120	-19.4
IMPORTS						
EUROPE :	6723	6860	6776	6404	-371	-5.5
of which :						
Germany, Fed. Rep. of	1620	1927	1808	1725	-84	-4.6
United Kingdom	1419	1138	1193	1165	-28	-2.3
Netherlands	683	680	701	...	...	...
France	803	802	733	661	-72	-9.8
Italy	361	378	444	355	-89	-20.0
Spain	243	320	364	322	-42	-11.5
Belgium-Lux	170	191	220	...	...	...
Switzerland	165	176	137	166	29	21.2
Other countries	1259	1248	1175	1090	-85	-7.2

Graph 17
Consumption of particle board, 1964 to 1993

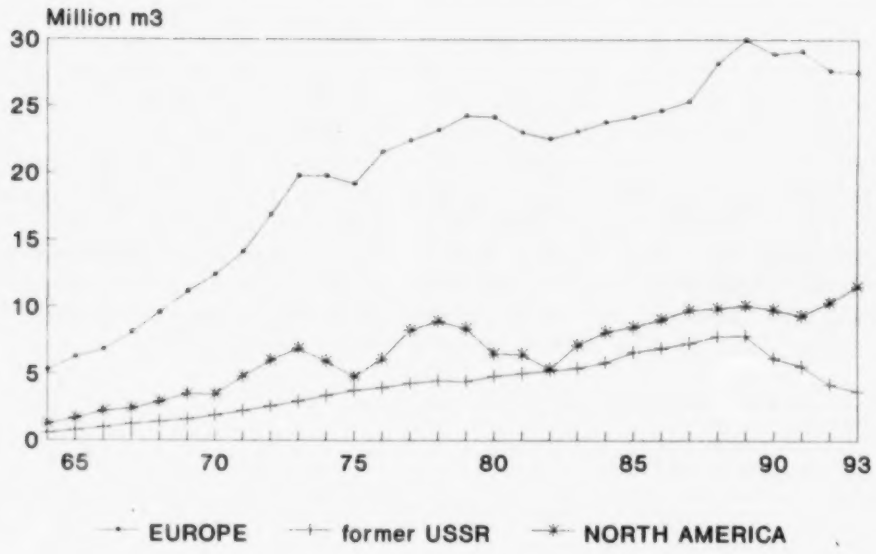


Table 31
Particle board (wood and non-wood) balance in Europe and the former USSR, 1989 to 1993
(million m³)

	1989	1990	1991	1992	1993 (prelim.)	Timber Committee estimates a/ for 1993	Timber Committee estimates a/ for 1994
EUROPE							
Production	28.99	28.40	28.65	27.31	27.72	27.51	28.04
Imports	7.09	6.72	6.86	6.78	6.40	6.41	6.33
Exports	6.11	6.22	6.40	6.42	6.64	6.49	6.53
Net trade b/	-0.98	-0.50	-0.46	-0.36	0.24	0.08	0.20
Apparent consumption	29.97	28.90	29.11	27.67	27.48	27.43	27.84
former USSR							
Production	8.20	6.40	5.69	4.82	4.16	4.00	4.56
Exports	0.36	0.23	0.11	0.62	0.50	0.32	0.60
Apparent consumption	7.84	6.17	5.58	4.20	3.66	3.68	3.96

a/ At October 1993 session. The Committee's estimates for 1993 and 1994 have been adjusted to make them comparable with the historical (actual) data for 1989-1993.
b/ + = net exports; - = net imports.

increased its export volumes mainly to the United Kingdom and Sweden. New OSB capacity is being installed in Europe. Nordboard is doubling the production capacity of its mill in Scotland and Louisiana-Pacific is installing a new plant in Ireland.

Exports and imports of particle board showed divergent trends in 1993. **Exports** were up by 3.4% to 6.6 million m^3, a continued increase since 1983 and a new record level. Most countries reported slight improvements with the exception of Spain, Finland and Italy where major increases were registered. At least some of this went to other regions, including Japan. Only France and to a lesser extent the United Kingdom showed important cutbacks. **Imports** of particle board were down by 5.5% in 1993. As a result, the preliminary net trade figure for 1993 (which may be modified with further data) show Europe becoming a small net exporter of particle board, up 0.2 million m^3, compared to net imports of 0.5 million m^3 around 1990.

The strong demand in the United States boosted **production** of both particle board and OSB in *North America*. Particle board and OSB production were up by 9% or 1.5 million m^3 over 1992 and Canadian **exports** increased by 44% or 0.9 million m^3 to 2.9 million m^3, while United States **imports** went up by 40% to 2.8 million m^3. The Canadian market continued depressed as shown by the 1% fall in apparent consumption, but its industries benefitted from demand in the United States where apparent consumption was 10.6% higher than in 1992 (table 32).

Table 32
North American apparent consumption, production and trade of particle board (including OSB), 1992 to 1993
(1000 m^3)

	1992	1993	Change 1992 to 1993 Volume	Percent
Apparent consumption				
Canada	1669	1652	-17	-1.0
United States	14536	16083	1547	10.6
North America	16205	17735	1530	9.4
Production				
Canada	3557	4422	865	24.3
United States	13095	13728	633	4.8
North America	16652	18150	1498	9.0
Imports				
Canada	173	198	25	14.5
United States	2026	2841	815	40.2
North America	2199	3039	840	38.2
Exports				
Canada	2061	2968	907	44.0
United States	585	486	-99	-16.9
North America	2646	3454	808	30.5

Of the 1.5 million m^3 of increased production in 1993, approximately one third was particle board, excluding OSB; in the United States it was up 4.5% to 7.5 million m^3 and in Canada it was up 17.8% to 1.4 million m^3.

Shortages in raw material supply for coniferous plywood production and continued high demand for structural panels in the United States have resulted in higher deliveries from OSB mills in North America, which were working at close to capacity. Plans for capacity expansion are under way, but it may not be until 1996 that new production lines will start to come on stream. OSB production in the United States increased by 5.2% to 6.2 million m^3 and in Canada by 27.7% to 3 million m^3. In the United States, OSB's share of the structural panel sector was 32% of apparent consumption and it rose 1% to be 27% of production.

(ii) Plywood

Preliminary **production** data for plywood in *Europe* in 1993 (at the time of writing, 11 countries were unable to reply) showed an increase of more than 7% to a level of 3.2 million m^3. Three countries accounted for this increase: Finland, Spain and Sweden (table 33 and table 34 and graph 18). **Exports** from the latter countries

Table 33
Production and trade of plywood, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
PRODUCTION			(1000 m3)			(%)
EUROPE :	3450	3032	2966	3181	214	7.2
of which :						
Finland	643	477	462	621	159	34.4
France	518	470	482	460	-22	-4.6
Germany, Fed. Rep. of	416	424	429	...	...	...
Italy	445	450	427	415	-12	-2.8
Spain	141	140	120	200	80	66.7
Austria	120	140	150	...	...	...
Poland	126	111	132	126	-6	-4.5
Romania	123	51	100	...	...	...
former Czechoslovakia	234	157	87	90	3	3.4
Sweden	68	67	55	78	23	41.8
Other countries	615	544	522	512	-11	-2.0
former USSR	1744	1548	1336	1099	-237	-17.7
EXPORTS						
EUROPE :	1715	1527	1735	1728	-7	-0.4
of which :						
Finland	515	347	348	542	194	55.7
France	210	222	228	252	24	10.6
Belgium-Lux	133	169	157	...	...	...
Austria	128	145	131	129	-2	-1.5
Germany, Fed. Rep. of	83	81	372	112	-261	-70.0
Other countries	647	563	499	537	38	7.5
former USSR	361	240	432	508	76	17.6
IMPORTS						
EUROPE :	4678	4337	4840	4372	-468	-9.7
of which :						
United Kingdom	1454	1271	1397	1157	-240	-17.2
Germany, Fed. Rep. of	663	664	879	861	-18	-2.1
Netherlands	655	619	636	...	...	...
France	442	414	423	341	-82	-19.3
Belgium-Lux	361	385	341	...	...	...
Italy	212	204	216	241	25	11.6
Other countries	890	781	948	795	-153	-16.1

Table 34
Plywood balance in Europe and the former USSR, 1989 to 1993
(million m^3)

	1989	1990	1991	1992	1993 (prelim.)	Timber Committee estimates a/	
						for 1993	for 1994
EUROPE							
Production	3.60	3.45	3.03	2.97	3.18	3.03	3.02
Imports	4.60	4.68	4.34	4.84	4.37	4.55	4.72
Exports	1.71	1.72	1.53	1.74	1.73	1.92	1.91
Net trade b/	-2.89	-2.96	-2.81	-3.10	-2.64	-2.63	-2.81
Apparent consumption	6.49	6.41	5.84	6.07	5.82	5.66	5.83
former USSR							
Production	2.30	1.74	1.55	1.34	1.10	1.11	1.13
Imports	0.03	0.02	0.01	0.00	0.01	0.00	0.00
Exports	0.42	0.36	0.24	0.43	0.51	0.37	0.39
Net trade b/	0.39	0.34	0.23	0.43	0.50	0.37	0.38
Apparent consumption	1.91	1.40	1.32	0.91	0.60	0.74	0.74

a/ At October 1993 session. The Committee's estimates for 1993 and 1994 have been adjusted to make them comparable with the historical (actual) data for 1989-1993.
b/ + = net exports; - = net imports.

Graph 18
Consumption of plywood, 1964 to 1993

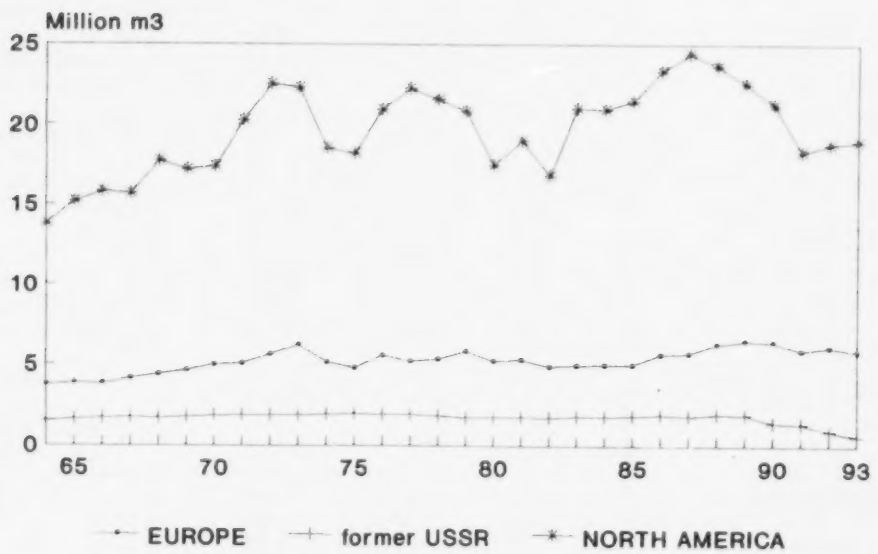
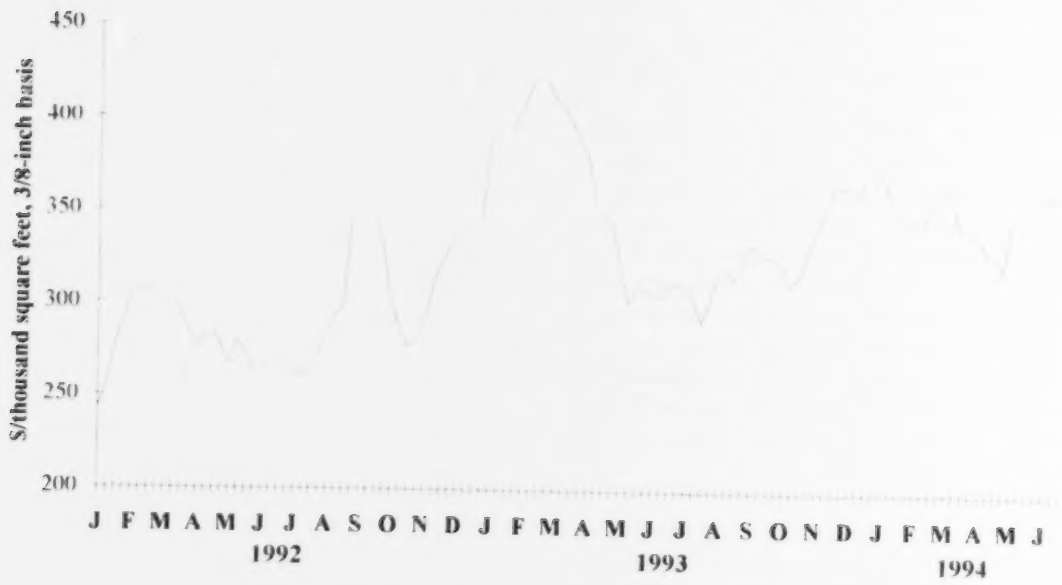


Table 35
North American apparent consumption, production and trade of plywood, 1992 to 1993

	1992	1993	Change 1992 to 1993 Volume	Percent
Apparent consumption				
Canada	1647	1752	105	6.4
United States	17363	17393	30	0.2
North America	19010	19145	135	0.7
Production				
Canada	1838	1824	-14	-0.8
United States	17109	17094	-15	-0.1
North America	18947	18918	-29	-0.2
Imports				
Canada	217	341	124	57.1
United State	1530	1546	16	1.0
North America	1747	1887	140	8.0
Exports				
Canada	408	413	5	1.2
United States	1276	1247	-29	-2.3
North America	1684	1660	-24	-2.0

Graph 19
North American composite structural panel prices, 1992 to 1994



Source: *Random Lengths Export*

were able to offset a sharp drop in Germany of 261,000 m^3 or 70%, thus European exports remained close to 1992 levels. **Imports** dropped in 1993 by almost 10% or 468,000 m^3; of this amount, the United Kingdom, the major importer, accounted for a 240,000 m^3 or 17.2% decrease due to restrained domestic demand. United Kingdom imports from southeast Asia dropped by 36%, and from the United States by 6%. During 1993, pressure on log prices in southeast Asia resulted in escalating plywood prices, which benefitted less expensive Brazilian exports. Another result was substitution by MDF of tropical plywood in interior applications.

Notwithstanding the increase in plywood prices, Japan reached a record high import volume, over 4 million m^3, of which 84% came from Indonesia by far the largest producer in the world; in 1992 it accounted for 21% of world production, about twice that of Japan, the second producer, and about four times total European production.

Production and apparent consumption of plywood in *North America* in 1993 showed little change from 1992. **Imports** in Canada were up by 124,000 m^3 to 341,000 m^3. North American **exports** to Europe continued to decline by almost 12%; the major drops were in Belgium, the Netherlands and the United Kingdom. Only exports to Germany showed a positive change in 1993. Canadian exports to Japan reached almost 100,000 m^3, a 37% increase (table 35).

Logging restrictions in the western United States have had an influence on *structural panel capacity*. Several plywood mill closures have been announced and other mills have been reduced to one shift per day. The American Plywood Association estimates that in the next two years an additional 1.3 million m^3 of plywood capacity will be shut down permanently, primarily in the Pacific Northwest since southern plywood production has stabilised. Production increases of OSB in the United States and Canada have not only been able to satisfy the drop in plywood supply but have also satisfied the growth of demand for structural panels. It will not be before 1996, when the 17 OSB plants which have been announced in Canada and in the United States come on stream, that structural panel capacity will be above the 1989 level.

Structural panels are increasingly substituting or sawnwood, due to the current sawnwood shortage and increased prices. Demand for laminated veneer lumber (LVL) is growing fast in the United States which is also a substitute for solid wood. LVL is laid up from veneers as in plywood production and in the case of "I-joists" the web pieces are usually made of OSB. A recent study expects that demand increase for LVL by the year 2000 will require a doubling of the capacity of the 10 existing plants.

Structural panel prices in 1992 rose by 28%, reflecting a 20% increased demand from the construction sector after a decade where price fluctuations did not exceed 10%. In 1993 the *Random Lengths* Structural Panel Composite Index rose 13% despite a moderate 7% increase in housing starts (graph 19). With OSB operating rates near full capacity and continued growth of demand, prices are expected to further increase in 1994, but at a more moderate rate.

(iii) Fibreboard

Preliminary fibreboard **production** figures in *Europe* in 1993 showed an increase of 8.1% to a level of 4.6 million m^3, just below the record production reached in 1989. Both hardboard (including MDF) and insulating board production accounted for this result. Among the reporting countries only Italy and Sweden had a lower output in 1993 than 1992. The **import** market showed a fallback of almost 4%, while the **export** market was active and showed an increase of 15.8%. Italy and Spain expanded their exports considerably by opening new markets in Japan and southeast Asia. This trend is expected to continue in 1994 (tables 36 and 37, and graph 20).

Japan increased its MDF imports by 68% in 1993 to 160,000 m.t.; Italy, Germany and Spain together supplied 7% of the total. Hardboard imports by Japan were 16% higher in 1993 than in 1992 and reached a volume of 60,130 m.t.; Italy alone supplied 30,500 m.t. and imports from Spain, France and Germany amounted to 7,000 m.t.

Demand for MDF continues to be high in Europe as expanded MDF applications penetrate new markets and additional capacity comes on stream. At the end of 1993 there were 34 MDF plants in Europe with a total production capacity of 3.5 million m^3.

In *North America*, **production** of fibreboard increased by 3% in 1993. In Canada production of both MDF and hardboard were up 10.3% and insulating board increased by 12.6%. In the United States MDF production was 7.5% higher in 1993, hardboard production remained at 1992 levels, and at the time of writing, data for insulating board were not available (table 38).

Table 36
Production and trade of fibreboard, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
PRODUCTION	(1000 m3)					(%)
EUROPE :						
Hardboard a/	3492	3467	3398	3664	267	7.8
Insulating board	901	865	856	936	79	9.3
Total	4393	4331	4254	4600	346	8.1
of which :						
Germany, Fed. Rep. of	499	576	588	686	98	16.7
Poland	501	487	472	533	61	12.9
Spain	350	360	400	480	80	20.0
France	275	290	425	471	46	10.8
Portugal	275	325	293	...	...	...
Romania	340	283	263	...	...	...
Italy	240	250	250	240	-10	-4.0
Ireland	160	160	162	...	...	...
Norway	192	165	157	...	...	...
Other countries	1561	1435	1244	1315	71	5.7
former USSR	4160	4160	1648	1375	-273	-16.6
EXPORTS						
EUROPE :	1870	1865	1837	2126	289	15.8
of which :						
Italy	205	184	209	361	152	72.7
Spain	171	168	198	304	106	53.6
France	201	285	273	220	-53	-19.4
Germany, Fed. Rep. of	170	202	217	209	-8	-3.5
Portugal	166	159	186	...	...	...
Ireland	104	104	145	...	...	...
Other countries	854	762	609	701	92	15.0
former USSR	288	288	237	248	11	4.6
IMPORTS						
EUROPE :	2147	2102	2148	2065	-83	-3.9
of which :						
United Kingdom	329	348	391	374	-17	-4.3
Germany, Fed. Rep. of	296	314	346	310	-36	-10.5
Netherlands	243	238	237	...	...	...
Italy	212	184	211	208	-3	-1.4
Belgium-Lux	115	120	134	...	...	...
Spain	70	116	116	114	-2	-1.8
Other countries	881	781	713	688	-25	-3.5

a/ Including medium density fibreboard.

Table 37
Fibreboard balance in Europe and the former USSR, 1989 to 1993
(million m^3)

	1989	1990	1991	1992	1993 (prelim.)	Timber Committee estimates a/ for 1993	Timber Committee estimates a/ for 1994
EUROPE							
Production	4.67	4.39	4.33	4.25	4.60	4.49	4.73
Imports	2.05	2.15	2.10	2.15	2.06	2.10	2.10
Exports	1.74	1.87	1.86	1.84	2.13	1.86	1.91
Net trade b/	-0.31	-0.28	-0.24	-0.31	0.07	-0.24	-0.19
Apparent consumption	4.98	4.67	4.57	4.56	4.53	4.73	4.92
former USSR							
Production *	4.16	4.16	4.16	1.65	1.38	..	..
Exports	0.29	0.29	0.29	0.24	0.25	..	..
Apparent consumption	3.87	3.87	3.87	1.41	1.13	..	..

a/ At October 1993 session. The Committee's estimates for 1993 and 1994 have been adjusted to make them comparable with the historical (actual) data for 1989-1993.
b/ + = net exports; - = net imports.

Graph 20
Consumption of fibreboard, 1964 to 1993

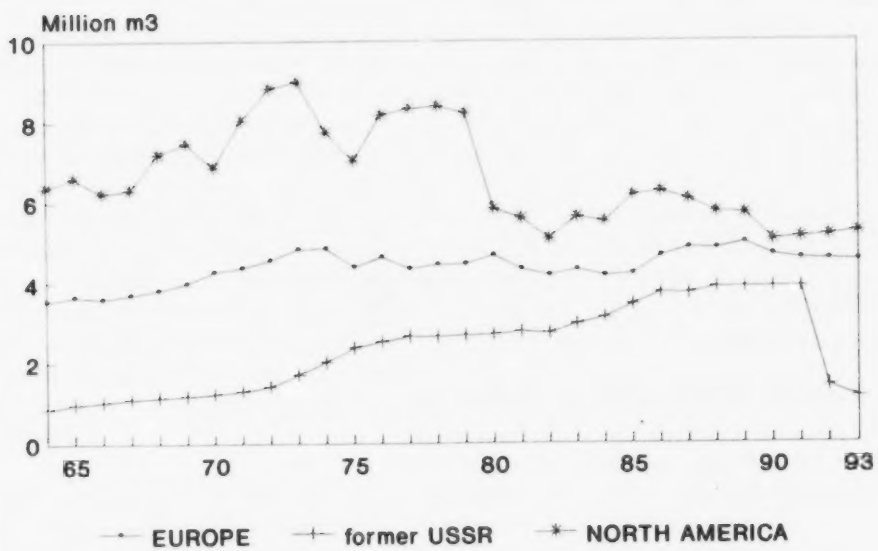


Table 38
North American apparent consumption, production and trade of fibreboard, 1992 to 1993
(1000 m^3)

	1992	1993	Change 1992 to 1993 Volume	Percent
Apparent consumption				
Canada	672	750	78	11.6
United States	6524	6653	129	2.0
North America	7196	7403	207	2.9
Production				
Canada	672	750	78	11.6
United States	6753	6898	145	2.1
North America	7425	7648	223	3.0
Imports				
Canada	...	...	...	...
United States	252	241	11	4.4
North America				
Exports				
Canada	...	...	...	...
United States	481	486	5	1.0
North America				

E. PAPER AND PAPERBOARD, WOODPULP AND PULPWOOD

(i) Paper and paperboard

In 1993, the practically unbroken upward trend in production and consumption of paper and paperboard in Europe and North America continued, as demonstrated by graph 21. Not only has consumption of paper and paperboard more than doubled over the last 30 years in both regions, but the rate of growth has been extremely steady: *European* production has grown about 2.7% a year over the whole period from 1970 to 1993. This is basically due to paper's competitivity, on price and convenience as an information bearer and a packaging material in every sector of the economy. Consumption of paper and paperboard has in general expanded at a very similar rate to the economy as a whole.

In 1993, as in previous years, the strongest growth in production was for printing and writing paper, including newsprint, while for other assortments (sanitary and household, packaging), growth was slow, or even negative. This is also a continuation of a long term trend, with growth for printing and writing driven by the expansion of the service sector, and of communications (office papers, faxes etc.), and the strength of paper based advertising, especially magazines, "free sheets", and direct mail, which appear to be holding their own in the competition against other media. In the *United States*, however, shipments of paper hardly grew at all in the first quarter of 1994 (compared to the first quarter of 1993), while those of paperboard grew 4.5% (source: AF&PA).

The data for 1993 show above average growth rates for production in the major export oriented countries, notably Canada, Finland and Sweden: this is essentially due to recovery from relatively bad results in 1991 and 1992. It often appears that the exporting countries are more strongly affected by cyclical movements, up or down, than countries which mainly produce for domestic markets (table 39).

(ii) Woodpulp

The trend for pulp is less expansionary than for paper: production of pulp rose in 1993 in Europe, by slightly over 1%, but did not pass the level of 1991, and remained 1.7 million m.t. below the record level of 1990. In North America, the peak was reached in 1992, and production fell slightly in 1993. The discrepancy between trends for pulp and for paper is essentially due to the strong rise in the availability of secondary fibre, stimulated by policy decisions in the environmental field to encourage recycling and thereby to reduce pressure on landfill facilities (see chapter III). The ratio of pulp to paper capacity, worldwide, was nearly 80% in 1973, but has been falling steadily, to 67.8% in 1993, and is forecast to reach 65.2% in 1998 (source: FAO pulp and paper capacities survey, 1993-1998).

Graph 21

Consumption of paper and paperboard
1964 to 1993

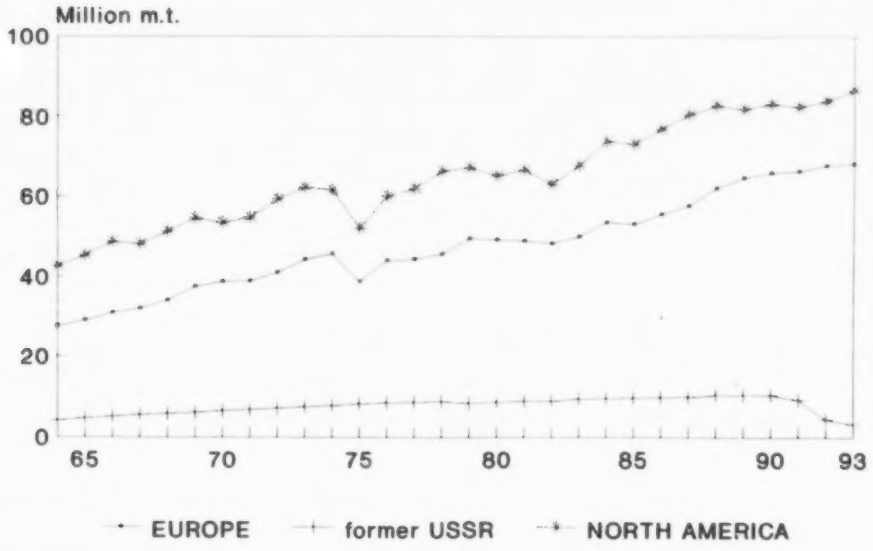


Table 39

Production of paper and paperboard in Europe and North America, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
NEWSPRINT			(1000 m.t.)			(%)
EUROPE :	8745	8442	8593	9235	642	7.5
of which :						
Sweden	2273	2063	2124	2325	201	9.5
Finland	1430	1305	1257	1425	168	13.4
Germany, Fed. Rep. of	1118	1108	1130	1210	80	7.1
Norway	910	955	934	1007	73	7.8
France	422	509	669	801	132	19.7
United Kingdom	696	672	700	741	41	5.9
Other countries	1896	1830	1779	1726	-53	-3.0
Canada	9069	8977	8931	9424	493	5.5
United States	6001	6206	6424	6419	-5	-0.1
North America	15070	15183	15355	15843	488	3.2
Japan	3479	3515	3255	...	...	...
OTHER PRINTING AND WRITING PAPER						
EUROPE :	23754	24350	25047	25870	823	3.3
of which :						
Finland	4768	4778	5045	5567	522	10.3
Germany, Fed. Rep. of	4788	5114	5173	5038	-135	-2.6
France	2773	2827	2948	2950	2	0.1
Italy	2247	2252	2397	2381	-16	-0.7
Sweden	1655	1793	1805	1884	79	4.4
United Kingdom	1387	1478	1583	1636	53	3.4
Other countries	6136	6108	6096	6414	318	5.2
Canada	3599	3564	3567	3919	352	9.9
United States	20092	20016	21224	21653	429	2.0
North America	23691	23580	24791	25572	781	3.2
Japan	9250	9730	9610	...	...	...
OTHER PAPER AND PAPERBOARD						
EUROPE :	35368	35225	35347	35898	551	1.6
of which :						
Germany, Fed. Rep. of	5967	5910	6040	6004	-36	-0.6
Sweden	4491	4493	4443	4572	129	2.9
France	3854	3854	4073	...	...	...
Italy	3107	3347	3542	3555	13	0.4
Finland	2769	2693	2845	2998	153	5.4
United Kingdom	2741	2801	2869	2866	-3	-0.1
Other countries	12439	12127	11535	11830	295	2.6
Canada	3798	4018	4099	4176	77	1.9
United States	45872	46646	47596	48479	883	1.9
North America	49670	50664	51695	52655	960	1.9
Japan	15359	15811	15459	...	...	...

In Europe, there is a marked difference between the *Nordic countries*, where pulp production rose in 1993, and most others, where it fell. The 3 major Nordic producers (Finland, Norway, Sweden) now account for over 60% of European pulp production, compared to 56% in 1990. The reasons for this are complex but probably include the technical, financial and marketing strength of the major Nordic companies, the attractions of secondary fibre as a raw material in regions closer to markets (thus discouraging production of pulp), and the difficulty of obtaining permission to erect new pulp plants in heavily populated areas because of the emissions (until a completely "closed cycle" pulp mill is technically and economically feasible).

The weakness in 1993 of *southern European* pulp producers (France, Portugal, Spain) is also noticeable from table 40.

Although the growth in recovery of secondary fibres is an important structural element depressing demand for pulp, there are other, more cyclical, but equally important, factors at work, which fundamentally changed the pulp markets in 1993. Stocks (inventories) had built up to very high levels: in early 1993, NORSCAN (North American and Scandinavian) pulp stocks were nearly 2 million m.t. the highest since the artificial levels of the late 1970s. Rising shipments made it possible to reduce these to just over 1.4 million m.t. at end 1993, and less at the end of the first quarter. As a consequence, pulp prices for the benchmark grade, northern bleached softwood kraft (NBSK), which had fallen from a record high of $950/m.t. in early 1990 to below $400/m.t. in autumn 1993, have started to rise again and reached $550/m.t. in mid 1994 (these figures were obtained before the weakness of the dollar in June/July 1994, which, if maintained, would influence the pulp price in dollars as the major market is western Europe and prices are quoted in both dollars and Deutsche marks). This expected price rise is subject to a continuation of present trends: if, for example, significant new pulp capacity came on stream, this would exert downward pressure on prices. In this context, it is relevant to note that the list of planned pulp mills presented to the FAO Advisory Committee on Pulp and Paper in June 1994 listed no less than 21 new mills in Indonesia, of which 9, with an aggregate announced capacity of over 3 million m.t., had start-up dates in 1994, 1995 or 1996[1]. World chemical pulp capacity is expected to increase 1.4% in 1995 over 1994, and by 1.8% in 1996.

The *transition countries* (with the exception of Russia) have never been significant producers of pulp, paper and paperboard, but the new situation has led to a virtual collapse of the pulp and paper industries in these countries. They cannot achieve profitability in the newly competitive markets and are hampered by lack of capital, obsolete and polluting plants and weak domestic demand. In 1993, these countries probably accounted for less than 7% of total European pulp production, compared to about 10% in 1990.[2] The only exception is Poland where pulp production has risen to 780,000 m.t. from the 1991 low of 714,900 m.t., although the 1989 level has not yet been recovered. The drop in pulp production in many countries has "liberated" large volumes of pulpwood, which now have no markets except exports. Given the complexity and capital intensiveness of new investments in this sector (and western investors are tending to prefer greenfield sites, despite the longer lead times, to upgrading of existing facilities, partly to avoid liability e.g. for pollution damage by former plants), this situation is almost certain to continue for several years.

These data from forest sector sources, in physical terms, are roughly confirmed by data for industrial output by branch, from national statistics, published in the ECE Economic Survey of Europe in 1993-94 (for the pulp and paper sector, as an index with 1989=100):

	1992	1993
Bulgaria	57.6	55.3
Czech Republic	78.3	..
Hungary	71.3	62.6
Poland	82.2	85.2
Romania	37.0	34.5

In all the above countries, industrial output in the pulp and paper sector (as in practically all other sectors) was below the 1989 level. It dropped in 1993 in Bulgaria, Hungary and Romania, but rose in Poland. The level of output of this sector has been better (less bad) than that of other sectors in Bulgaria, the Czech Republic Hungary and Poland, but below the average in

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[1] It is unusual for all announced mills to be built, but the potential is there, especially as Indonesia has 1.4 million hectares of industrial wood plantations.

[2] This is in fact an overestimate as no 1993 data are available for Albania, Bulgaria, Romania, or former Yugoslavia (except Slovenia), and data for earlier years are carried over unchanged for the totals, although there are several (unquantified) reports of steep drops in production in those countries, as well as the Baltic countries.

Table 40

Production of woodpulp in Europe and North America, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
	(1000 m.t.)					(%)
MECHANICAL WOODPULP						
EUROPE :	12785	12157	11721	12018	298	2.5
of which :						
Finland	3293	3156	3170	3401	231	7.3
Sweden	2953	2709	2525	2722	197	7.8
Norway	1334	1293	1217	1418	202	16.6
Germany, Fed. Rep. of	1496	1418	1403	1327	-76	-5.4
Other countries	3708	3581	3406	3150	-256	-7.5
Canada	10537	10630	10243	10578	335	3.3
United States	5772	5810	5898	5587	-311	-5.3
North America	16309	16440	16141	16165	24	0.1
Japan	2064	2091	1861	...	...	...
CHEMICAL WOODPULP a/						
EUROPE :	24483	23606	23346	23496	150	0.6
of which :						
Sweden	6966	7060	7065	7231	166	2.3
Finland	5593	5349	5371	5937	566	10.5
France	1732	1622	1807	1723	-84	-4.6
Portugal	1449	1619	1592	1518	-74	-4.6
Spain	1321	1378	1409	1243	-166	-11.8
Austria	1107	1111	1106	1079	-27	-2.4
Germany, Fed. Rep. of	855	855	807	812	5	0.6
Norway	869	815	789	749	-40	-5.1
Other countries	4592	3796	3400	3204	-196	-5.8
Canada	12298	12678	12410	12286	-124	-1.0
United States	51445	52024	53382	52684	-698	-1.3
North America	63743	64702	65792	64970	-822	-1.2
Japan	9264	9651	9333	...	...	...

a/ Including semi-chemical woodpulp and dissolving grades.

Romania. It is likely that the drop in output has been greater for pulp production than for paper, given the large scale and high pollution potential of pulp mills.

(iii) Pulpwood

"Derived requirements" for pulpwood (estimated on the basis of production of pulp and panels) rose slightly in Europe in 1993, but are still below the levels of 1990 and 1991 (table 41). In North America, derived requirements fell 0.5% from the record level of 1992, but are still higher than in 1990 and 1991. In fact, in Europe in 1993, requirements fell in most countries, but this was counterbalanced by the above mentioned rise in demand for pulpwood in the Nordic countries.

Although the volume of pulpwood consumed in Europe rose slightly, demand was weak and prices low: pulp prices were very low until end 1993, recovered fibre prices were even negative, and there is a structural "surplus" of thinning and significant volumes are available in eastern Europe in countries whose pulp industries are, at least for the present, practically collapsed.

Although all forests produce pulpwood and pulpwood has an increasing range of uses, its consumption is concentrated in a surprisingly small number of countries. According to the estimates for "derived consumption" in table 42, four countries (Sweden, Finland, Germany and France) account for about 60% of European pulpwood consumption. This analysis will therefore concentrate on conditions on these markets, especially as they have a strong influence on trade flows and prices in other countries (table 43).

In both *Sweden and Finland*, during 1993, pulpwood prices, influenced by international pulp prices, were low. As a consequence, many forest owners were not willing to cut; bottlenecks and temporary shortages occurred in autumn 1993, as well as a rise in imports in both countries in 1993 (17% of derived consumption in Finland in 1993). After difficult negotiations between the industry and forest owners associations, price rises were announced in spring 1994, of 15 to 17% in Finland, and of a similar magnitude in Sweden. In Finland, these price rises were accompanied by economic incentives to forest owners and commitments by their associations to harvest more. A factor making this rise possible was the rise in pulp prices on the international market which started in autumn 1993 and is continuing in summer 1994.

By contrast, in *Germany* and neighbouring countries, where the increase in pulpwood consumption was weaker, the thinning backlog larger and the influence of the waste paper surplus stronger, *industrieholz* (equivalent to pulpwood) prices remained low in 1993 and the first half of 1994 (graph 22). In *Austria* there was a similar situation, exacerbated by increased imports, from Germany and from the Czech and Slovak republics (up 7% in total in 1993). Austrian pulpwood prices (spruce/fir class 1a/b) in 1993 were 26% lower than in the previous year. However, in spring/summer 1994, reports are appearing of a similar sequence of events as in the Nordic countries, i.e. reduced harvests leading to lower mill stocks and bottlenecks, and the first expectations of a price rise (not universally shared). Nevertheless, the "low" prices which apply at present and make it difficult to cover harvesting costs, still make German pulpwood expensive in an international comparison, because of high costs and the high level of the Deutsche mark.

The *Nordic countries* now dispose of an efficient system of importing pulpwood from all over the world, according to market requirements (domestic supply, prices, and technical demands, especially for species not available or not in sufficient quantity). The assortments and origins of Finnish pulpwood imports in 1993 are shown in Table 44.

Table 44
Pulpwood imports in Finland in 1993
(1000 m³)

By assortment	
Round pulpwood	
Pine	996
Spruce	149
Other coniferous	9
Birch	4651
Other non-coniferous (including eucalyptus)	306
Fuelwood (used as raw material)	34
Chips	293
By origin	
Russia	5044
Estonia	308
Latvia	287
Belarus	195
Poland	154
Germany	127
Argentina	77
South Africa	71
Brazil	59
Lithuania	35
Uruguay	24
Sweden	23
Chile	10
Portugal	10
Total	**6438**

Table 41

Derived pulpwood requirements in Europe and North America, 1990 to 1993

	1990	1991	1992	1993 (prelim.)
	(million m3 EQ) a/			
EUROPE				
Mechanical woodpulp	31.96	30.39	29.30	30.05
Semi-chemical woodpulp	5.03	4.76	4.64	4.52
Chemical woodpulp b/	109.47	105.69	104.64	105.54
Particle board	39.76	40.11	38.23	38.81
Fibreboard	7.91	7.80	7.66	8.28
Total	194.13	188.75	184.47	187.20
Change on previous year				
- Volume		-5.38	-4.28	2.73
- Percent		-2.8	-2.3	1.5
NORTH AMERICA				
Mechanical woodpulp	40.77	41.10	40.35	40.41
Semi-chemical woodpulp	12.88	12.63	12.69	12.22
Chemical woodpulp b/	285.36	290.36	295.49	292.30
Particle board	13.98	13.21	15.07	16.73
Fibreboard	9.85	9.61	9.95	10.06
Total	362.84	366.91	373.55	371.72
Change on previous year				
- Volume		4.07	6.64	-1.83
- Percent		1.1	1.8	-0.5

a/ Equivalent volume of wood in the rough, calculated from data on production of pulp and panels, using the following conversion factors : Mechanical woodpulp : 1 m.t. = 2.5 m^3 EQ; Semi-chemical woodpulp : 1 m.t. = 3.0 m^3 EQ; Chemical woodpulp (including dissolving) : 1 m.t. = 4.8 m^3 EQ; Particle board : 1 m^3 = 1.4 m^3 EQ; Fibreboard : 1 m^3 = 1.8 m^3 EQ.

b/ Including dissolving pulp.

Table 42

Derived pulpwood requirements in selected countries, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
	(million m3 EQ) a/					(%)
Sweden	42.07	41.68	40.83	42.12	1.28	3.1
Finland	35.30	33.52	33.56	36.97	3.41	10.2
Germany, Fed. Rep. of	18.53	18.98	18.74	19.43	0.69	3.7
France	13.72	13.82	15.27	14.81	-0.45	-3.0
Spain	9.88	10.14	9.95	9.20	-0.75	-7.6
Portugal	8.58	9.46	9.05	8.70	-0.36	-3.9
Austria	8.52	8.81	8.66	8.51	-0.15	-1.8
Norway	8.34	7.86	7.53	7.85	0.32	4.2
Poland	4.98	5.20	5.46	5.91	0.45	8.2
Italy	6.49	6.11	4.80	4.67	-0.13	-2.7
Canada	90.29	91.48	90.28	91.98	1.70	1.9
United States	272.56	275.43	283.28	279.75	-3.53	-1.2

a/ Equivalent volume of wood in the rough calculated from data on production of pulp and panels, using the conversion factors given in the footnote a/ to previous table.

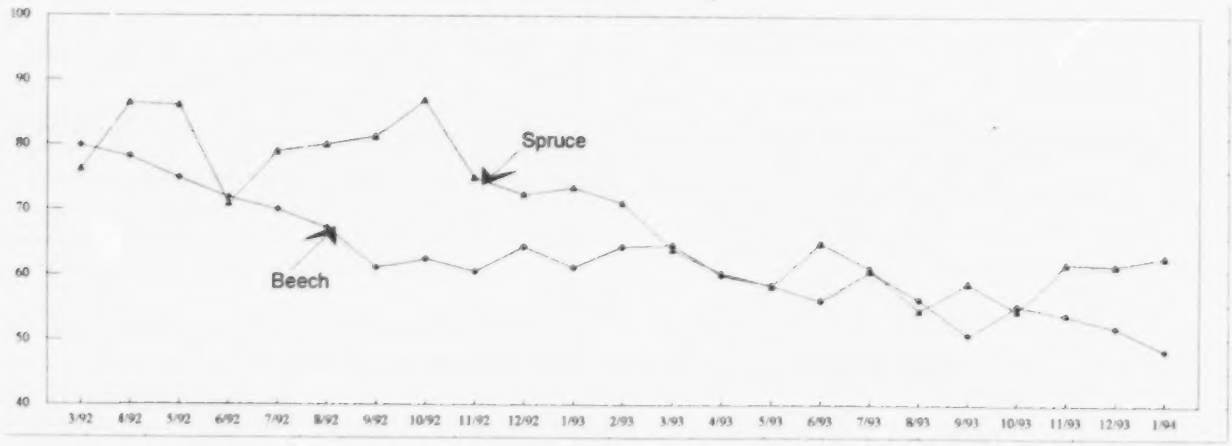
Table 43
Removals of pulpwood, round and split in Europe and North America, 1990 to 1993
(Million m³)

	1990	1991	1992	1993[1]	Change 1992 to 1993	
					Volume	Percent
Europe	114.6	111.9	115.4	109.6	-5.9	-5.1
of which						
Sweden	24.1	24.6	24.5	21.1	-3.4	-13.9
Finland	21.2	17.1	19.1	18.0	-1.1	-5.6
Germany	12.2	13.3	13.8	12.8	-0.9	-6.7
France	9.8	10.4	10.6	9.6	-1.0	-9.4
Spain	9.3	9.3	9.5	...		
Portugal	5.8	6.3	6.5	...		
Poland	4.7	4.3	6.0	6.3	0.3	4.6
Canada	45.5	45.5	...	...		
United States	143.5	148.7	146.1	...		
North America	189.0	194.2	191.6	...		

[1] Preliminary

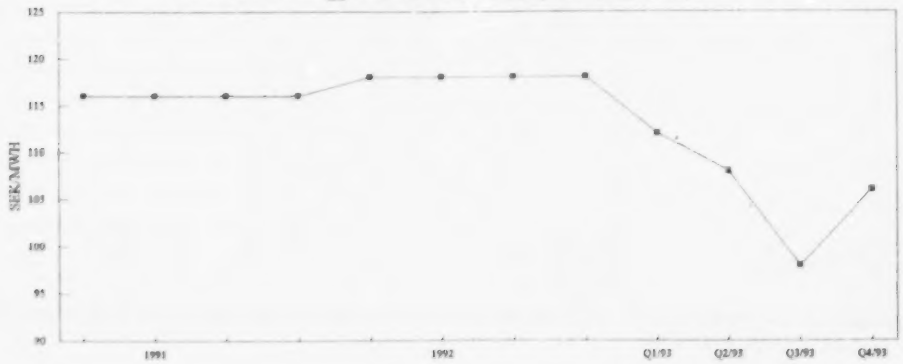
Graph 22

Price indices for *industrieholz* in Germany, 1992 to 1994
(1985=100)



Graph 23

Price of energy wood in Sweden, 1991 to 1993



By far the largest supplier is Russia, and the largest flow, accounting for 66% of the total, is of Russian birch, mainly to mills situated relatively near the border, which may be considered a "structural" flow. Nevertheless, the ability of the Finnish (and Swedish and Japanese) industries to seek out new suppliers and to modify their import structure in the light of short term market conditions is a powerful factor in creating a global pulpwood market and makes it possible for new suppliers, even very far from Europe, to enter the market if the economic and technical conditions are right. This is especially true for short fibre pulpwood. It is notable that the unit value of pulpwood from remote (non-European) destinations to Finland, high is mostly eucalyptus and other short fibre pulpwood, is considerably higher (typically double) that from European and Russian origins.[1]

Finnish and Swedish import demand was the "motor" for higher exports and removals in several neighbouring countries in 1993. Latvia exported just over 1 million m^3 of industrial wood in the rough (0.6 million m^3 coniferous and 0.4 million m^3 non-coniferous), of which a significant part was certainly pulpwood. There were no comparable data for 1992. Most of this went to Finland and Sweden. Lithuania reported exports of roundwood of under 70,000 m^3, and Estonia also exported to Finland and Sweden. Latvian pulpwood removals increased, by 150%, from 0.3 to 0.8 million m^3 in 1993, while in Poland pulpwood removals rose for the second year running, to 6.3 million m^3, 45% higher than in 1991.

Japanese imports of pulpwood chips fell slightly, by 0.8%, to 15.8 million m^3, including coniferous and non-coniferous. 73% of Japanese chip imports were of non-coniferous species (including from all 3 major suppliers) (table 45). The principal suppliers were:

United States	5.55 million m^3 (down 10.1%)
Australia	4.66 million m^3 (up 12%)
Chile	2.35 million m^3 (down 9.5%).

There are few formal markets for energy wood, despite the evident importance of this use for wood. The only documented market known to the secretariat (i.e. with published time series of prices) is in Sweden, which shows that the price of chips for use as energy (mostly in district heating plants) fell in 1994, no doubt as a reaction to the low prices for pulpwood and fossil fuels (graph 23).

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[1] This discrepancy is possible because of the difference in quality. Small amounts of eucalyptus pulp may make it possible to produce pulp or paper of considerable higher value, justifying the higher raw material price.

Table 45

Exports and imports of wood residues, chips and particles, 1990 to 1993

	1990	1991	1992	1993 (prelim.)	Change 1992 to 1993 Volume	Change 1992 to 1993 Percent
			(1000 m3)			(%)
EXPORTS						
EUROPE	5371	6417	7801	7060	-741	-9.5
of which :						
Germany, Fed. Rep. of	1706	2448	2864	2695	-169	-5.9
Austria	465	465	1311	1060	-251	-19.1
France	790	921	1250	928	-322	-25.8
Netherlands	486	521	514	...	...	...
Belgium-Lux	285	500	477	...	...	...
Sweden	343	308	288	295	7	2.4
Finland	212	210	218	217	-1	-0.5
Ireland	148	148	148	...	...	...
Switzerland	32	70	83	95	12	14.5
Hungary	88	88	88	...	...	...
Other countries	818	738	560	542	-18	-3.2
former USSR	801	801	473	359	-114	-24.1
Canada	1735	1385	1259	1166	-93	-7.4
United States	8100	9350	8585	7972	-613	-7.1
North America	9835	10735	9844	9138	-706	-7.2
IMPORTS						
EUROPE	6319	6425	9087	8160	-927	-10.2
of which :						
Austria	410	410	2094	2068	-26	-1.2
France	603	735	1049	871	-178	-17.0
Belgium-Lux	610	813	852	...	...	...
Germany, Fed. Rep. of	1193	1096	1042	711	-331	-31.8
Italy	420	633	709	687	-22	-3.1
Finland	313	498	969	657	-312	-32.2
Switzerland	473	493	609	634	25	4.1
Sweden	1133	699	605	508	-97	-16.0
Norway	423	268	347	...	...	...
Netherlands	313	346	336	...	...	...
Other countries	428	434	476	490	14	3.0
Canada	186	243	418	404	-14	-3.3
United States	1366	1086	888	1307	419	47.2
North America	1552	1329	1306	1711	405	31.0
Japan	19787	22788	22004	...	...	...

Annex
Table 1
Coniferous sawnwood apparent consumption, 1991 to 1993

Country	APPARENT CONSUMPTION Total (1000 m3)		Per capita (m3/1000 capita)		CONSOMMATION APPARENTE Total (1000 m3)			Pays
	1979-81 (average)	1991-93	1979-81 (moyenne)	1991 93	1991	1992	1993	
Albania *	105	105	39	31	105	105	105	Albanie *
Austria	2469	3454	327	438	3518	3459	3385	Autriche
Belgium-Luxembourg	1245	1851 *	122	178 *	1966	1793	...	Belgique-Luxembourg
Bulgaria	1194	424	135	47	913	194	166	Bulgarie
Cyprus	119	59 *	189	82 *	56	61	...	Chypre
former Czechoslovakia	3057	1836 *	200	117 *	2068	1720	...	ancienne Tchécoslovaquie
Denmark *	1518	1929	296	373	1818	1960	2008	Danemark *
Finland	3016	2073	631	411	1651	2343	2226	Finlande
France	7773	7597	144	132	8205	7555	7031	France
Germany	...	...	...	...	...	...	...	Allemagne
former G.D.R. *	3098	2732 *	185	170 *	2732	...	...	ancienne R.D.A. *
Germany, Fed. Rep. of	11793	15197	192	235	14739	15379	15473	Allemagne, Rép. Féd. d'
Greece	760	680 *	79	66 *	676	682	...	Grèce
Hungary	1302	642 *	122	62 *	597	664	...	Hongrie
Iceland	65	68 *	284	261 *	61	71	...	Islande
Ireland	557	465 *	164	131 *	505	445	...	Irlande
Israel	234	352 *	60	69 *	352	352	...	Israël
Italy	5286	5165	94	90	5214	5184	5098	Italie
Malta	16	10 *	48	28 *	10	10	...	Malte
Netherlands	2257	2393	160	158	2269	2443	2469	Pays-Bas
Norway	2405	1972	589	461	1998	1952	1967	Norvège
Poland a/	5377	2747	151	72	2417	3089	2736	Pologne a/
Portugal	1000	511 *	102	52 *	547	493	...	Portugal
Romania	1491	824 *	67	36 *	916	778	...	Roumanie
Spain	2263	3000	60	77	3547	2855	2598	Espagne
Sweden	4834	3581	582	413	4420	3764	2558	Suède
Switzerland	1870	1695	295	246	1856	1652	1577	Suisse
Turkey	3631	3393	82	58	3320	3352	3507	Turquie
United Kingdom	7229	8520	128	147	8451	8789	8321	Royaume-Uni
former Yugoslavia	2394	1054	107	44	1307	941	913	ancienne Yougoslavie
EUROPE	78357	74330	147	131	76234	74817	b/	EUROPE
former USSR *	79420	42265	299	144	61650	37796	27350	ancienne URSS *
Canada a/	13449	16228	559	591	15417	16517	16351	Canada a/
United States a/	79141	104374	348	409	98225	106442	108454	Etats-Unis a/
NORTH AMERICA	92590	120602	368	427	113642	123359	124805	AMERIQUE DU NORD
Japan	33118	32233 *	284	259 *	32866	31916	...	Japon

a/ Home produced sleepers included.

b/ Correct preliminary 1993 European apparent consumption is 70.66 million m^3

a/ Y compris la production domestique de traverses.

b/ Les données provisoires de la consommation apparente en Europe pour 1993 est 70.66 millions m^3

Annex
Table 2
Non-coniferous sawnwood apparent consumption, 1991 to 1993

Country	APPARENT CONSUMPTION				CONSOMMATION APPARENTE			Pays
	Total (1000 m3)		Per capita (m3/1000 capita)		Total (1000 m3)			
	1979-81 (average)	1991-93	1979-81 (moyenne)	1991-93	1991	1992	1993	
Albania *	95	95	36	28	95	95	95	Albanie *
Austria	391	283	52	36	310	277	262	Autriche
Belgium-Luxembourg	675	914 *	66	88 *	673	1035	...	Belgique-Luxembourg
Bulgaria	450	114	51	13	177	104	61	Bulgarie
Cyprus	15	26 *	24	36 *	26	26	...	Chypre
former Czechoslovakia	702	277	46	18	399	210	223	ancienne Tchécoslovaquie
Denmark *	386	323	75	63	443	268	258	Danemark *
Finland	67	73	14	14	74	78	66	Finlande
France	3805	3297	71	57	3730	3186	2976	France
Germany	...	...	...	...	...	...	...	Allemagne
former G.D.R. *	469	325 *	28	20 *	325	...	...	ancienne R.D.A. *
Germany, Fed. Rep. of	2468	2114	40	33	2152	2161	2030	Allemagne, Rép. Féd. d'
Greece	287	195 *	30	19 *	231	177	...	Grèce
Hungary	732	314 *	68	30 *	599	171	...	Hongrie
Iceland	2	2 *	9	7 *	2	2	...	Islande
Ireland	77	62 *	23	17 *	85	50	...	Irlande
Israel	19	66 *	5	13 *	66	66	...	Israël
Italy	2558	2328	45	41	2578	2294	2111	Italie
Malta	8	7 *	25	19 *	7	7	...	Malte
Netherlands	785	780	55	51	780	810	750	Pays-Bas
Norway	60	45	15	10	42	45	47	Norvège
Poland	1010	513	28	13	497	511	532	Pologne
Portugal	176	332 *	18	34 *	317	339	...	Portugal
Romania	2083	1379 *	94	60 *	1177	1480	...	Roumanie
Spain	1126	1400	30	36	1333	1509	1357	Espagne
Sweden	252	251	30	29	254	251	249	Suède
Switzerland	188	149	30	22	194	120	133	Suisse
Turkey	963	1541	22	26	1529	1506	1589	Turquie
United Kingdom	1309	921	23	14	1010	778	674	Royaume-Uni
former Yugoslavia	1141	1177	51	49	1179	1149	1202	ancienne Yougoslavie
EUROPE	22299	19201	42	34	20281	19028	18292	EUROPE
former USSR *	12347	10043	46	34	13045	9886	7197	ancienne URSS *
Canada	1735	1107	72	40	1109	1011	1202	Canada
United States	16675	24558	73	96	22558	24872	26245	Etats-Unis
NORTH AMERICA	18410	25666	73	91	23667	25883	27447	AMERIQUE DU NORD
Japan	7992	4688 *	68	38 *	4787	4638	...	Japon

Annex
Table 3
Particle board apparent consumption, 1991 to 1993

Country	APPARENT CONSUMPTION				CONSOMMATION APPARENTE			Pays
	Total (1000 m3)		Per capita (m3/1000 capita)		Total (1000 m3)			
	1979-81 (average)	1991-93	1979-81 (moyenne)	1991-93	1991	1992	1993	
Austria	598.5	872.3	79.2	110.7	892.0	876.0	849.0	Autriche
Belgium-Luxembourg	632.2	733.0 *	61.9	70.5 *	695.0	752.0	...	Belgique-Luxembourg
Bulgaria	300.2	152.4	33.9	17.0	205.1	128.1	124.1	Bulgarie
Cyprus	7.6	17.7 *	12.2	24.5 *	15.0	19.0	...	Chypre
former Czechoslovakia	664.9	592.1	43.5	37.6	751.2	530.0	495.0	ancienne Tchécoslovaquie
Denmark	460 8	430.0	90.0	83.2	517.0	438.0	335.0	Danemark
Finland	429.6	267.9	89.9	53.0	273.6	273.0	257.0	Finlande
France	2254.0	2642.3	41.8	46.1	2722.6	2541.4	2562.8	France
Germany	...	...	...	...	...	...	...	Allemagne
former G.D.R. *	928.8	849.8 *	55.5	53.0 *	849.8	...	...	ancienne R.D.A. *
Germany, Fed. Rep. of	6355.7	8437.3	103.3	130.7	8366.7	8279.8	8665.3	Allemagne, Rép. Féd. d'
Greece	288.7	285.7 *	30.1	27.7 *	295.0	281.0	...	Grèce
Hungary	308.3	273.7 *	28.8	26.5 *	287.0	267.0	...	Hongrie
Iceland	21.0	19.8 *	91.3	76.0 *	23.9	17.7	...	Islande
Ireland	124.7	118.3 *	36.6	33.3 *	117.0	119.0	...	Irlande
Israel	54.2	72.0 *	14.0	14.0 *	72.0	72.0	...	Israël
Italy	1893.3	2830.3	33.6	49.5	3333.0	2652.0	2506.0	Italie
Netherlands	537.2	679.3	38.0	44.7	674.7	682.6	680.6	Pays-Bas
Norway	396.2	300.4	97.0	70.2	310.1	297.7	293.4	Norvège
Poland	1216.8	978.0	34.2	25.5	898.1	960.0	1076.0	Pologne
Portugal	265.7	360.7 *	27.2	36.6 *	367.0	357.5	...	Portugal
Romania	723.5	439.3 *	32.6	19.2 *	466.0	426.0	...	Roumanie
Spain	1079.7	1851.4	28.8	47.4	1978.0	1895.9	1680.3	Espagne
Sweden	701.0	663.0	84.4	76.4	764.0	598.0	627.0	Suède
Switzerland	470.3	450.7	74.2	65.5	489.0	435.0	428.0	Suisse
Turkey	363.2	804.5	8.2	13.7	543.6	946.0	924.0	Turquie
United Kingdom	1940.3	2506.7	34.5	43.4	2645.6	2459.5	2414.9	Royaume-Uni
former Yugoslavia	800.2	459.3	35.9	19.2	565 3	405.3	407.3	ancienne Yougoslavie
EUROPE	23816.8	28087.8	44.7	49.4	29117.3	27659.3	27486.7	EUROPE
former USSR *	4747.2	4493.9	17.9	15.4	5582.0	4216.0	3683.8	ancienne URSS *
Canada	880.7	1677.0	36.6	61.1	1710.0	1669.0	1652.0	Canada
United States	6202.0	8712.0	27.2	34.2	7603.0	8648.0	9885.0	Etats-Unis
NORTH AMERICA	7082.7	10389.0	28.1	36.8	9313.0	10317.0	11537.0	AMERIQUE DU NORD
Japan	1275.6	1247.3	10.9	10.0	1226.0	1173.0	1343.0	Japon

a/ Including non-wood particle board.

a/ Y compris les panneaux de particules non-dérivés du bois.

Annex
Table 4
Plywood apparent consumption, 1991 to 1993

Country	APPARENT CONSUMPTION				CONSOMMATION APPARENTE			Pays
	Total (1000 m3)		Per capita (m3/1000 capita)		Total (1000 m3)			
	1979-81 (average)	1991-93	1979-81 (moyenne)	1991-93	1991	1992	1993	
Albania *	7.0	7.0	2.6	2.1	7.0	7.0	7.0	Albanie *
Austria	18.8	89.0 *	2.5	11.3 *	71.0	98.0	...	Autriche
Belgium-Luxembourg	159.0	262.3 *	15.6	25.2 *	283.0	251.9	...	Belgique-Luxembourg
Bulgaria	53.0	16.4	6.0	1.8	14.3	17.0	18.0	Bulgarie
Cyprus	11.2	8.6 *	17.8	12.0 *	14.3	5.8	...	Chypre
former Czechoslovakia	270.5	91.8 *	17.7	5.8 *	125.4	75.0	...	ancienne Tchécoslovaquie
Denmark	134.2	140.7	26.2	27.2	122.0	167.0	133.0	Danemark
Finland	103.7	134.1	21.7	26.6	157.4	131.0	114.0	Finlande
France	666.5	630.2	12.4	11.0	661.7	679.4	549.4	France
Germany	...	...	...	...	...	...	...	Allemagne
former G.D.R. *	93.1	62.2 *	5.6	3.9 *	62.2	...	...	ancienne R.D.A. *
Germany, Fed. Rep. of	845.3	1040.2	13.7	16.1	1006.6	935.8	1178.3	Allemagne, Rép. Féd. d'
Greece	52.9	68.5 *	5.5	6.7 *	79.5	63.0	...	Grèce
Hungary	38.8	16.7 *	3.6	1.6 *	10.0	20.0	...	Hongrie
Iceland	4.8	4.7 *	21.0	17.9 *	5.6	4.2	...	Islande
Ireland	39.0	50.0 *	11.5	14.1 *	52.0	49.0	...	Irlande
Israel	46.0	57.0 *	11.9	11.1 *	57.0	57.0	...	Israël
Italy	445.0	554.7	7.9	9.7	559.0	553.0	552.0	Italie
Malta	5.9	6.0 *	18.0	16.7 *	6.0	6.0	...	Malte
Netherlands	495.6	577.4	35.1	38.0	570.9	582.2	579.2	Pays-Bas
Norway	73.2	51.1	17.9	11.9	56.5	63.1	33.7	Norvège
Poland b/	219.6	88.4	6.2	2.3	62.3	110.0	93.0	Pologne b/
Portugal	13.1	21.9 *	1.3	2.2 *	24.0	20.8	...	Portugal
Romania	162.5	84.3 *	7.3	3.7 *	53.0	100.0	...	Roumanie
Spain	98.2	140.2	2.6	3.6	130.0	124.2	166.5	Espagne
Sweden	162.7	152.0	19.6	17.5	181.0	137.0	138.0	Suède
Switzerland	90.8	116.0	14.3	16.9	119.5	111.0	117.4	Suisse
Turkey	37.7	146.2	0.8	2.5	62.7	229.0	147.0	Turquie
United Kingdom	957.8	1250.8	17.0	21.6	1240.2	1370.1	1142.0	Royaume-Uni
former Yugoslavia	136.3	44.6 *	6.1	1.9 *	47.3	43.3	...	ancienne Yougoslavie
EUROPE	5442.3	5913.0	10.2	10.4	5841.4	6073.0	5824.7	EUROPE
former USSR *	1743.9	942.3	6.6	3.2	1322.0	908.6	596.4	ancienne URSS *
Canada	1989.7	1755.3	82.8	64.0	1867.0	1647.0	1752.0	Canada
United States	17111.7	16913.3	75.2	66.3	16424.0	17124.0	17192.0	Etats-Unis
NORTH AMERICA	19101.4	18668.7	75.9	66.1	18291.0	18771.0	18944.0	AMERIQUE DU NORD
Japan	7839.2	9497.3	67.1	76.4	9594.0	8898.0	10000.0	Japon

Annex
Table 5
Fibreboard apparent consumption, 1991 to 1993

Country	APPARENT CONSUMPTION				CONSOMMATION APPARENTE			Pays
	Total (1000 m3)		Per capita (m3/1000 capita)		Total (1000 m3)			
	1979-81 (average)	1991-93	1979-81 (moyenne)	1991-93	1991	1992	1993	
Austria	55.1	71.7	7.3	9.1	67.0	61.0	87.0	Autriche
Belgium-Luxembourg	56.7	119.7 *	5.6	11.5 *	107.0	126.0	...	Belgique-Luxembourg
Bulgaria	75.4	40.3	8.5	4.5	57.0	25.0	39.0	Bulgarie
Cyprus	1.1	30.2 *	1.8	42.0 *	26.7	32.0	...	Chypre
former Czechoslovakia	213.1	63.5	13.9	4.0	93.5	47.0	50.0	ancienne Tchécoslovaquie
Denmark *	58.9	72.2	11.5	14.0	53.0	96.3	67.4	Danemark *
Finland	152.5	96.5	31.9	19.1	94.5	95.0	100.0	Finlande
France	240.6	263.2	4.5	4.6	207.9	247.0	334.8	France
Germany	...	...	...	...	...	...	...	Allemagne
former G.D.R. *	359.7	227.2 *	21.5	14.2 *	227.2	...	...	ancienne R.D.A. *
Germany, Fed. Rep. of	494.2	730.7	8.0	11.3	688.4	717.3	786.5	Allemagne, Rép. Féd. d'
Greece	24.6	128.1 *	2.6	12.4 *	124.8	129.8	...	Grèce
Hungary	101.6	39.0 *	9.5	3.8 *	37.0	40.0	...	Hongrie
Iceland	2.2	3.3 *	9.4	12.7 *	3.5	3.2	...	Islande
Ireland	26.4	55.1 *	7.8	15.5 *	97.3	34.0	...	Irlande
Israel	10.0	10.0 *	2.6	1.9 *	10.0	10.0	...	Israël
Italy	277.9	196.3	4.9	3.4	250.0	252.0	87.0	Italie
Netherlands	142.4	245.5	10.1	16.2	243.6	247.0	246.0	Pays-Bas
Norway	153.6	159.7	37.6	37.3	163.2	154.4	161.5	Norvège
Poland	601.6	343.8	16.9	9.0	247.3	377.3	406.8	Pologne
Portugal	51.0	151.9 *	5.2	15.4 *	186.5	134.6	...	Portugal
Romania	248.3	246.0 *	11.2	10.7 *	272.0	233.0	...	Roumanie
Spain	227.9	305.5	6.1	7.8	308.0	318.4	290.1	Espagne
Sweden	318.5	200.7	38.3	23.1	279.0	175.0	148.0	Suède
Switzerland	72.8	123.6	11.5	18.0	115.6	121.3	133.9	Suisse
Turkey	69.7	93.6	1.6	1.6	69.9	101.9	108.9	Turquie
United Kingdom	397.2	456.7	7.1	7.9	473.1	465.8	431.3	Royaume-Uni
former Yugoslavia	54.3	83.3	2.4	3.5	65.0	94.0	91.0	ancienne Yougoslavie
EUROPE	4487.4	4557.5	8.4	8.0	4568.0	4565.5	4539.0	EUROPE
former USSR *	2714.6	2138.8	10.2	7.3	3871.7	1413.9	1130.9	ancienne URSS *
Canada	779.7	504.6	32.4	18.4	579.8	442.0	492.0	Canada
United States	5766.3	4660.3	25.3	18.3	4515.0	4718.0	4748.0	Etats-Unis
NORTH AMERICA	6546.0	5164.9	26.0	18.3	5094.8	5160.0	5240.0	AMERIQUE DU NORD
Japan	614.5	1077.3	5.3	8.7	1005.0	1055.0	1172.0	Japon

Annex
Table 6
Hardboard apparent consumption, 1991 to 1993

Country	APPARENT CONSUMPTION				CONSOMMATION APPARENTE			Pays
	Total (1000 m3)		Per capita (m3/1000 capita)		Total (1000 m3)			
	1979-81 (average)	1991-93	1979-81 (moyenne)	1991-93	1991	1992	1993	
Austria	41.1	50.7	5.4	6.4	33.0	48.0	71.0	Autriche
Belgium-Luxembourg	50.0	90.3 *	4.9	8.7 *	83.0	94.0	...	Belgique-Luxembourg
Bulgaria	75.4	40.3	8.5	4.5	57.0	25.0	39.0	Bulgarie
Cyprus	1.0	28.2 *	1.5	39.2 *	24.7	30.0	...	Chypre
former Czechoslovakia	148.0	50.4	9.7	3.2	54.1	47.0	50.0	ancienne Tchécoslovaquie
Denmark	38.2	66.1	7.5	12.8	48.0	89.3	61.1	Danemark
Finland	56.5	37.9	11.8	7.5	38.8	37.0	38.0	Finlande
France	159.3	216.4	3.0	3.8	117.4	244.0	287.8	France
Germany	...	...	...	...	...	...	...	Allemagne
former G.D.R. *	359.7	227.2 *	21.5	14.2 *	227.2	...	...	ancienne R.D.A. *
Germany, Fed. Rep. of	336.9	623.1	5.5	9.7	589.9	603.3	676.2	Allemagne, Rép. Féd. d'
Greece	18.1	128.1 *	1.9	12.4 *	124.8	129.8	...	Grèce
Hungary	101.6	39.0 *	9.5	3.8 *	37.0	40.0	...	Hongrie
Iceland	1.2	2.4 *	5.4	9.1 *	2.3	2.4	...	Islande
Ireland	22.1	43.8 *	6.5	12.3 *	65.3	33.0	...	Irlande
Israel	0.0	0.0 *	0.0	0.0 *	0.0	0.0	...	Israël
Italy	216.2	171.3	3.8	3.0	229.0	221.0	64.0	Italie
Netherlands	97.8	187.2 *	6.9	12.3 *	202.3	179.6	...	Pays-Bas
Norway	84.4	42.7	20.7	10.0	42.0	39.6	46.4	Norvège
Poland	353.0	227.7	9.9	5.9	264.3	207.0	211.8	Pologne
Portugal	50.9	149.8 *	5.2	15.2 *	184.9	132.2	...	Portugal
Romania	144.7	90.0 *	6.5	3.9 *	116.0	77.0	...	Roumanie
Spain	227.3	290.5	6.1	7.4	260.0	318.0	293.5	Espagne
Sweden	206.4	137.3	24.9	15.8	179.0	116.0	117.0	Suède
Switzerland	43.4	75.2	6.8	10.9	75.7	87.4	62.5	Suisse
Turkey	69.7	93.6	1.6	1.6	69.9	101.9	108.9	Turquie
United Kingdom	234.6	361.7	4.2	6.3	372.1	335.8	327.3	Royaume-Uni
former Yugoslavia	54.3	79.3	2.4	3.3	65.0	89.0	84.0	ancienne Yougoslavie
EUROPE	3191.8	3550.3	6.0	6.2	3562.7	3604.5	3483.7	EUROPE
former USSR *	1293.6	1311.3	4.9	4.5	1921.7	1111.4	900.8	ancienne URSS *
Canada	215.7	215.9	9.0	7.9	238.8	181.0	228.0	Canada
United States	2005.9	1596.7	8.8	6.3	1607.0	1583.0	1600.0	Etats-Unis
NORTH AMERICA	2221.6	1812.6	8.8	6.4	1845.8	1764.0	1828.0	AMERIQUE DU NORD
Japan	285.8	539.7	2.4	4.3	488.0	529.0	602.0	Japon

Annex

Table 7

Former USSR/Russian Federation base prices for unsorted coniferous sawnwood to the United Kingdom, 1984 to 1994 (£/m³, c.i.f.)

		Redwood (pine)	Whitewood (spruce)
1984	January	152	101
	May	156	103
1985	February	168	102
1986	January	158	102
	May	180	119
1987	January	178	118
	May	180	119
1988	January	177	117
	May	177	117
1989	January	180	120
	May	183	126
1990	January	203	167
	May	204	168
1991	March	188	136
	May	191	136
1992	March	187	125
	May	198	127
1993	March	194	113
	May	194	113
1994	May	205	153
% increase May 1993 to May 1994		5.7	35.4

Source: *Softwood Market Report*, Churchill & Sim Ltd, 1994.

Annex

Table 8
Swedish coniferous sawnwood export prices, 1986 to 1994
(Swedish krona/m³, f.a.s.)

		Redwood (pine)		Whitewood (spruce)	
		Unsorted	Fifths	Unsorted	Fifths
1986		1,695	1,257	1,145	950
1987		1,715	1,245	1,300	1,070
1988		1,830	1,335	1,365	1,115
1989		1,895	1,507	1,390	1,140
1990	January	2,027	1,747	1,710	1,470
	April	2,032	1,780	1,737	1,503
	July	2,032	1,780	1,778	1,503
	October	2,023	1,738	1,753	1,486
1991	January	2,001	1,732	1,683	1,380
	February	1,988	1,623	1,640	1,220
	July	1,900	1,580	1,590	1,130
	October	1,950	1,495	1,610	1,120
1992	January	1,946	1,425	1,565	1,080
	April	1,948	1,388	1,589	1,073
	July	1,987	1,353	1,549	1,087
	October	1,967	1,287	1,518	1,056
1993	January	1,991	1,345	1,439	1,060
	April	2,054	1,404	1,468	1,180
	July	2,089	1,440	1,557	1,242
	October	2,095	1,480	1,598	1,359
1994	January	2,147	1,557	1,667	1,433
	March	2,185	1,573	1,707	1,499
% change from March 1993 to March 1994		7.4	14.4	19.2	35.2

Source: *Allman manadsstatistik* (Monthly digest of Swedish Statistics), 1994:6, Sveriges officiella statistik, Statistiska centralbyran 1994 (Official Statistics of Sweden, Statistics Sweden 1994).

Some facts about the Timber Committee

The Timber Committee is a principal subsidiary body of the ECE (UN Economic Commission for Europe) based in Geneva. It constitutes a forum for cooperation and consultation between member countries on forestry, forest industry and forest product matters. All countries of Europe; the former USSR; United States of America, Canada and Israel are members of the ECE and participate in its work. The ECE Timber Committee shall, within the context of sustainable development:

Provide member countries with the information and services needed for policy- and decision-making regarding their forest and forest industry sector ("the sector"), including the trade and use of forest products and, when appropriate, formulate recommendations addressed to member Governments and interested organizations. To this end, it shall:

1. With the active participation of member countries, undertake short-, medium- and long-term analyses of developments in, and having an impact on, the sector, including those offering possibilities for the facilitation of international trade and for enhancing the protection of the environment;

2. In support of these analyses, collect, store and disseminate statistics relating to the sector, and carry out activities to improve their quality and comparability;

3. Provide the framework for cooperation e.g. by organizing seminars, workshops and *ad hoc* meetings and setting up time-limited *ad hoc* groups, for the exchange of economic, environmental and technical information between governments and other institutions of member countries that is needed for the development and implementation of policies leading to the sustainable development of the sector and to the protection of the environment in their respective countries;

4. Carry out tasks identified by the UN-ECE or the Timber Committee as being of priority, including the facilitation of subregional cooperation and activities in support of the economies in transition of central and eastern Europe and of the countries of the region that are developing from an economic point of view;

5. It should also keep under review its structure and priorities and cooperate with other international and intergovernmental organizations active in the sector, and in particular with the FAO (Food and Agriculture Organization) and its European Forestry Commission and with the ILO (International Labour Organisation), in order to ensure complimentarily and to avoid duplication, thereby optimizing the use of resources.

More information about the Committee's work may be obtained from:

Timber Section
UN-ECE/FAO Agriculture and Timber Division
Palais des Nations
CH-1211 Geneva 10, Switzerland
Fax: 41 22 917 0041

UN-ECE/FAO Timber Section Publications for 1994

**Timber Bulletin* Volume XLVII (1994)	
1. Forest Products Prices, 1989-1993	ECE/TIM/BULL/47/1
2. Forest Products Statistics, 1989-1993	ECE/TIM/BULL/47/2
3. Forest Products Annual Market Review, 1993-1994	ECE/TIM/BULL/47/3
4. Forest Fire Statistics, 1991-1993	ECE/TIM/BULL/47/4
5. Forest Products Trade Flow Data, 1989-1993	ECE/TIM/BULL/47/5
6. Forest Products Markets in 1994 and Prospects for 1995	ECE/TIM/BULL/47/6

***UN-ECE/FAO Timber and Forest Study Papers** (formerly ECE/TIM publications)	
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Forest and Forest Products Country Profile: Estonia	ECE/TIM/74
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2. Forest and Forest Products Country Profile: Slovenia	ECE/TIM/SP/2
3. Forest and Forest Products Country Profile: Lithuania	ECE/TIM/SP/3
4. Forest and Forest Products Country Profile: Ukraine	ECE/TIM/SP/4
5. Forest and Forest Products Country Profile: Belarus	ECE/TIM/SP/5
6. Forest resource information of some newly constituted countries--Supplement to the UN-ECE/FAO 1990 forest resource assessment of the temperate zones	ECE/TIM/SP/6
7. Medium-term survey of the sawmilling industry structure and capacity, 1992	ECE/TIM/SP/7
8. Medium-term survey of the wood-based panels industry structure and capacity, 1992	ECE/TIM/SP/8

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2. Brooks and Baudin, "Demand and supply modeling for ETTSV"	ECE/TIM/DP/2
3. ETTSV working paper: Scenarios for the forest resource and roundwood supply *(to be issued 1995)*	ECE/TIM/DP/x

UN-ECE/FAO Timber and Forest Seminar and Workshop Proceedings	
1. Clothing and safety equipment in forestry, Finland, 1994	none
2. Development of marketing of sawnwood products in countries in transition, Hungary, 1994 (to be issued 1995)	none

UN-ECE/FAO Timber and Forest Information Series	
The UN-ECE Timber Committee Yearbook 1993	ECE/TIM/INF/1
Facts about the ECE Timber Committee	none
Facts about the FAO European Forestry Commission	none
Joint FAO/ECE Working Party on Forest Economics and Statistics	none
Facts about the Joint FAO/ECE/ILO Committee on Forest Technology, Management and Training	none

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